HOUSE OF COMMONS SESSION 1999–2000

AGRICULTURE COMMITTEE

Eighth Report

GENETICALLY MODIFIED ORGANISMS AND SEED SEGREGATION

Report, together with the Proceedings of the Committee, Minutes of Evidence and Appendices

Ordered by The House of Commons *to be printed*
26 July 2000

PUBLISHED BY AUTHORITY OF THE HOUSE OF COMMONS
LONDON – THE STATIONERY OFFICE LIMITED
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The Agriculture Committee is appointed to examine on behalf of the House of Commons the expenditure, administration and policy of the Ministry of Agriculture, Fisheries and Food (and any associated public bodies). Its constitution and powers are set out in House of Commons Standing Order No. 152.

The Committee has a maximum of eleven members, of whom the quorum for any formal proceedings is three. The members of the Committee are appointed by the House and unless discharged remain on the Committee until the next dissolution of Parliament. The present membership of the Committee is as follows:

Mr David Borrow (*Labour, South Ribble*)
Mr David Curry (*Conservative, Skipton and Ripon*)
Mr David Drew (*Labour, Stroud*)
Mr Alan Hurst (*Labour, Braintree*)
Mr Michael Jack (*Conservative, Fylde*)
Mr Paul Marsden (*Labour, Shrewsbury and Atcham*)
Mr Austin Mitchell (*Labour, Great Grimsby*)
Mr Lembit Öpik (*Liberal Democrat, Montgomeryshire*)
Mr Owen Paterson (*Conservative, North Shropshire*)
Mr Mark Todd (*Labour, South Derbyshire*)
Dr George Turner (*Labour, North West Norfolk*)

On 15 February 2000, the Committee elected *Mr David Curry* as its Chairman.[1]

The Committee has the power to require the submission of written evidence and documents, to examine witnesses, and to make Reports to the House. In the footnotes to this Report, references to oral evidence are indicated by 'Q' followed by the question number, references to the written evidence are indicated by 'Ev' followed by a page number.

The Committee may meet at any time (except when Parliament is prorogued or dissolved) and at any place within the United Kingdom. The Committee may meet concurrently with other committees or sub-committees established under Standing Order No. 152 and with the House's European Scrutiny Committee (or any of its sub-committees) and Environmental Audit Committee for the purpose of deliberating, taking evidence or considering draft reports. The Committee may exchange documents and evidence with any of these committees, as well as with the House's Public Accounts and Deregulation Committees.

The Reports and evidence of the Committee are published by The Stationery Office by Order of the House. All publications of the Committee (including press notices) are on the internet at www.parliament.uk/commons/selcom/agrihome.htm. A list of Reports of the Committee in the present Parliament is at the end of this volume.

All correspondence should be addressed to the Clerk of the Agriculture Committee, Committee Office, 7 Millbank, London SW1P 3JA. The telephone number for general inquiries is 020 7219 3262; the Committee's e-mail address is: agricom@parliament.uk.

[1]On 16 July 1997, the Committee elected Mr Peter Luff as its Chairman. He was discharged on 21 February 2000.

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EIGHTH REPORT

The Agriculture Committee has agreed to the following Report:—

GENETICALLY MODIFIED ORGANISMS AND SEED SEGREGATION

1. On 17 May 2000 the Ministry of Agriculture, Fisheries and Food announced by way of written answer that some of the conventional rapeseed sold by Advanta Seeds UK and sown in 1999 and 2000 in several Member States of the European Union, including the United Kingdom, contained about 1 per cent genetically modified rapeseed. The Government had been advised by the Advisory Committee on Releases to the Environment (ACRE) and the Food Standards Agency that there was no risk to public health or the environment. Nevertheless, a package of measures relating to seed purity was outlined, including pressing for concerted international action to seek new legal standards for seed purity, testing seed imports and working with the industry on a Code of Practice. Later, on 8 June, the Minister announced that there would also be a review of separation distances, including a scientific review of the relationship between separation and crop purity. Advanta Seeds meanwhile told us that it has traced nearly all the affected seed sown in this country and has arranged a compensation package for farmers who planted the seed in question of £337 per hectare south of a line between Newcastle and Carlisle and £370 per hectare above that line. The European Commission has also agreed that farmers may claim subsidy payments on crops planted up to 15 June to allow for the replanting of fields which had been sown with affected seed or for the fields to be left empty, something the industry welcomes.

2. This incident raises many issues of public concern, relating to segregation, regulation and testing. In our Third Report of this Session, *The Segregation of Genetically Modified Foods*, we examined similar questions with a focus on the implications for the consumer of the growing adoption of GM crops in the US and the possibility of future commercial plantings in the UK. We concluded that the industry guidelines overseen by SCIMAC "offer a firm basis on which to build in order to segregate GM and non-GM crops in the UK countryside", but recommended that the Government should "ensure that the separation distances set out in the SCIMAC guidelines be reviewed if there is clear evidence of cross-pollination taking place within the existing guidelines".[1] We emphasise that the SCIMAC guidelines need to be kept under constant review and that it is imperative to build a broader consensus on this controversial issue. We also spent some time examining the EU regulations on GM content in foods and the importance of clear, informative, meaningful labelling. This background led us to resolve to explore with Ministers the implications for segregation of Advanta's discovery of GM content within its conventional seed supplies. Consequently, we held a single session of evidence with Advanta Seeds, followed by Baroness Hayman, Minister of State, MAFF, and the Rt hon Michael Meacher, Minister for the Environment, Department of the Environment, Transport and the Regions, accompanied by officials, on 18 July 2000. We are grateful to our witnesses for agreeing to appear before us and also to those who submitted written evidence in the necessarily truncated time available between the finalisation of arrangements and the hearing itself.

3. The proximity of the parliamentary recess makes it impossible for us to do justice to this complex and highly important issue before the House rises. We therefore intend to return to the subject in the autumn. However, the evidence given by Ministers highlighted certain concerns which must be addressed in the short term. **Clearer procedures are required for dealing with incidents of this kind. It was obvious that confusion existed as to which Ministry should lead on the issue. The lengthy internal debates on the incident contrasts with the robust, rapid Swedish disclosure in like circumstances. Planting of the new crop of winter oilseed rape begins in August[2] and it is essential that farmers are able to plant these crops with confidence. This means that this year's batch of seed must be tested and certified as free from GM content. For farmers near the field trials, it is also vital that they can be sure that their crops are protected as far as possible from inadvertent cross-pollination which will require a rapid assessment of the consultation on segregation distances and an equally rapid implementation of the advice which emerges as a result. Similarly, preliminary**

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[1] Third Report from the Agriculture Committee, Session 1999-2000, *The Segregation of Genetically Modified Foods*, HC 71, paras 25, 13.
[2] Ev. p.1.

results from the trials on gene flow should be peer-reviewed as soon as possible. Seed companies too need urgent regulatory guidance from the Government, if only in the interim, in order that the possibility of seeds with GM impurities being planted in the UK be minimised. The question of liability should be addressed in this context. Finally, and above all, the newly-established Agriculture and Environment Biotechnology Commission must be involved in these processes. These judgements will carry little confidence outside a narrow scientific community without broader consideration.

4. In the longer term, it is clear that the Government must work with its partners in the EU to produce workable regulations on seed purity, including thresholds and testing, as has been done for food. We expect progress to be made in this area over the summer. Baroness Hayman told us that she anticipated an outcome by Christmas this year.[3] Even for a voluntary agreement, this is a very ambitious timetable indeed, given the necessarily slow procedures of achieving agreement between Member States. We recognise that there is appparently no call for concern on health or environmental grounds as a direct result of the circumstances revealed by the Government in May and that the level of "contamination" in this case was extremely low, below the threshold allowed for adventitious GM content in non-GM foods. We also accept the advice given to us by scientists during our last inquiry that 100% purity is neither possible nor verifiable. Nevertheless, this event has highlighted a gap in the regulatory framework for the control of genetically modified organisms which has serious repercussions for segregation and consumer confidence. This gap must be closed. Our decision not to rush into overhasty conclusions on how this should be done is a reflection of the importance of the issue. We shall announce details of how we intend to proceed later this year.

[3] Q 112.

PROCEEDINGS OF THE COMMITTEE RELATING TO THE REPORT

WEDNESDAY 26 JULY 2000

Members present:

Mr David Curry, in the Chair

Mr David Drew	Mr Owen Paterson
Mr Michael Jack	Mr Mark Todd
Mr Austin Mitchell	Dr George Turner

The Committee deliberated.

Draft Report [Genetically Modified Organisms and Seed Segregation], proposed by the Chairman, brought up and read.

Ordered, That the draft Report be read a second time, paragraph by paragraph.

Paragraphs 1 to 4 read and agreed to.

Resolved, That the Report be the Eighth Report of the Committee to the House.

Ordered, That the Chairman do make the Report to the House.

Ordered, That the Appendices to the Minutes of Evidence taken before the Committee be appended to the Report.

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[Adjourned till to-morrow at half past Nine o'clock.

LIST OF WITNESSES

LIST OF MEMORANDA INCLUDED IN THE MINUTES OF EVIDENCE

LIST OF APPENDICES TO THE MINUTES OF EVIDENCE

UNPRINTED MEMORANDA

Additional memoranda have been received from the following and have been reported to the House, but to save printing costs they have not been printed and copies have been placed in the House of Commons Library where they may be inspected by Members. Other copies are in the Record Office, House of Lords, and are available to the public for inspection. Requests for inspection should be addressed to the Record Office, House of Lords, London SW1 (Tel 020 7219 3074). Hours of inspection are from 9.30 am to 5.30 pm on Mondays to Fridays.

1. Advanta Seeds UK Limited (G1) (Appendices)
2. Scottish Crop Research Institute (G2) (Appendices)
3. Ministry of Agriculture, Fisheries and Food (G11) (Annexes)

MINUTES OF EVIDENCE

TAKEN BEFORE THE AGRICULTURE COMMITTEE

TUESDAY 18 JULY 2000

Members present:

Mr David Curry, in the Chair

Mr David Drew	Mr Lembit Öpik
Mr Michael Jack	Mr Mark Todd
Mr Austin Mitchell	Dr George Turner

Memorandum submitted by Advanta Seeds UK Ltd (G 1)

BACKGROUND ON ADVANTA SEEDS UK

1.1 Advanta Seeds UK Limited ("Advanta UK") is a wholly-owned subsidiary of Advanta BV ("Advanta"), a company registered in the Netherlands. Advanta is also the holding company of Advanta Seeds Inc, a company registered in Canada.

1.2 Dr David Buckeridge is responsible for Advanta's European Operations. The General Manager of Advanta UK is Mr Mike Ruthven.

1.3 Advanta UK is primarily a plant breeder using classical methods. It is also involved in the UK Government's farm-scale field trials of selected GM crops and is fully committed to the Supply Chain Initiative on Modified Agricultural Crops (SCIMAC) code of practice. It sells no GM products in Europe.

REQUESTS FOR ACTION

2.1 It is a matter of serious regret that these issues, which industry has warned about for some time, have not been adequately addressed by the regulatory authorities to date. Early political action to create a comprehensive regulatory framework would have at best prevented this incident from occurring or at worst managed public expectations about seed purity and averted further media hysteria. It is essential that this regulatory framework be created with no further delay. At a minimum, thresholds for accidental GM impurity need to be set, standard testing methods need to be stipulated and results should be analysed by an approved and consistent statistical method. The regulations should provide these details.

1. *Seed Purity, GM impurity thresholds for seeds and the lack of regulation*

3.1 Seed production is carried out in open fields and absolute guarantees of seed purity have never been possible. Since they were first introduced in 1963, seed purity regulations have successfully kept varietal and other impurities to a fixed maximum level, usually no more than a few per cent. The same approach has been taken to the maximum permitted level of certain GM material (1 per cent) in food labelled as GM-free under European law. Trace levels of GM impurities will occur now that various parts of the world have accepted the value and safety of GMOs. This is universally recognised, including by Michael Meacher in his recent statements to the House of Commons.

3.2 Under UK and European law, no regulations currently exist for a maximum accidental GM content for conventional seed batches, leaving the seed industry in an impossible position. Seed industry groups have long pressed Government and the European Commission to establish such regulations. The incident is proof positive that despite strenuous efforts to maximise seed purity and despite full compliance with seed purity regulations, seed can enter the UK market with trace levels of impurity.

3.3 It is worth noting that even though the problem has been at the centre of media attention since the middle of May, and known about by Government since the middle of April (or possibly even earlier, given that the first industry meeting with the European Commission took place on 11 October 1999 and with the French Government in November 1999), at the time of writing there are still no regulations at either a national or EU level.

3.4 Fearing an apparent lack of appreciation of the timings of harvest and planting, Advanta UK urged the Minister of Agriculture to take action on threshold regulations when it was finally granted a meeting with him on 1 June. It is lamentable, with harvest of Winter Oilseed rape only days away, and planting of the new crop starting at the beginning of August, that regulatory guidance is still non-existent.

2. *Communications Problems*

4.1 From our perspective, the incident also serves to demonstrate that communication of the facts, allowing individuals to make informed decisions, is virtually impossible in our society today. This is especially true where the subject matter is highly technical. Advanta believes that a lack of understanding of the basics of agriculture existed in some quarters of the Ministry and most quarters of the media. Important technical points were glossed over or misinterpreted.

4.2 After the Government published the issue, it was impossible to communicate effectively with customers—a point that convinced Advanta to set up a registration scheme for farmers at an early stage, as much as anything for the communication of hard facts on the event. Even then, journalists posing as farmers plagued our free information phone service, blocking the lines for genuine callers. In addition, pressure groups deliberately sought to distort the facts in order to boost their position against GM.

4.3 It is a pity that many people outside Government seem more anxious to win the argument than to understand the facts. We doubt whether it will be possible to frame sensible and practical legislation in the wake of this event and strongly suspect that this will lead to a withdrawal of certain products from the UK market. . . yet another blow to the competitiveness of UK agriculture.

3. *Protecting the Interests of Farmers*

5.1 As stated above, as soon as the issue was made public by MAFF, five weeks after it was brought to their attention by Advanta, it was clear that farmers would need urgent advice on the facts of the situation and on how to handle their crops. In fact, Advanta made this clear to MAFF in a hand delivered memo (attached at Appendix 2 [not printed]) on 12 May, five days before the announcement was made. Advanta communicated in writing to all farmers, routing a standard letter through its merchant customers (Advanta, in common with most UK seed companies, does not sell direct to farmers and therefore does not have details of farmer customers). Advanta received excellent help from its merchant customers in this process. We also set up a free information service for farmers to phone and used these combined approaches to register all crops while we awaited Government advice.

5.2 Many farmers were very concerned about registering in the first instance. They feared that activists would vandalise their property and crops. We are still concerned about being ordered by Government to hand over farmer names and addresses. Legally, we are advised that to do so without being ordered would breach data protection rules. We believe this is an unnecessary step in any event, as all the acreage seems to be tracked down. At time of writing we have 5,200ha registered against a total sold of 4,700ha and have even gone to the lengths of advertising in the national farming press to ensure full coverage.

5.3 The other activity at the top of our priorities was the marketing options for the crop. Advanta had several discussions with different food chain partners in the days preceding the 27 May, when Nick Brown gave his press briefing about his preference for a "plough-in". Advanta, with the help of these partners, had devised a scheme to segregate the crop and harvest it for export. We tried to meet with MAFF to discuss this, but had no success. After a meeting with Baroness Hayman was cancelled by MAFF on 23 May, we decided to put the ideas in writing and faxed them to MAFF that day (attached at Appendix 8 [not printed]).

5.4 The ideas were still under active consideration according to the Baroness on 25 May (when she met industry representatives, but not Advanta). Therefore Mr Brown's statements on 27 May about his desire for a "plough-in" were a complete surprise. The briefing he gave was presented as "advice", as he recognised publicly at the time that he had no power to order it as he knew the crops posed no threat to human health or the environment. However, the briefing effectively removed any chance that the crop could be taken to harvest. When the Minister gave his "personal view", that it would be best to plough out the crop, we knew farmers would have no alternative and immediately decided to pay compensation. Advanta UK is still considering its legal position with regard to the financial costs of the Minister's unexpected remarks.

5.5 To be fair in hindsight, we believe that segregation would have been possible but logistically complicated. The tiny crop area involved spread across a wide geography would have made handling and transportation difficult. It still seems a waste to have ploughed up a crop that presented no risk to health or the environment. Ironically, the German crop (an even smaller area) has been segregated and will be used for fuel.

5.6 We presented plans for compensation to farmers at a meeting with Mr Brown and others on 1 June. We wrote to farmers immediately explaining that payments would be calculated by independent advisors and in consultation with farmers unions. One month later we had agreed settlement rates and the unions supported these. We continue to work on the logistics of getting the payments made and acknowledge the key role farmers unions have played in helping us to tackle this quickly.

4. *The Need for Urgent Regulation*

6.1 Regulations are needed. Throughout this issue and indeed from the earliest communications with the European Commission in October 1999, the industry has pressed for regulations. As we made clear to the Minister of Agriculture on 1 June (company minutes of the meeting attached at Appendix 9 [not printed]), we need to decide on tolerance thresholds (as we have done in food) and we need clear testing protocols. This is so that farmers and regulators can be assured that a standard achieved by one company is directly comparable to that achieved by another. Also, so that seed companies can know that expensive testing programmes that they will be forced to implement will be "spot checked" by governments using similar statistically valid analyses.

6.2 This brings a close analogy to food. We have listened to reports of food retailers who claim to sell GM free food. We have no idea what testing methods they use or whether their sampling techniques are sufficiently robust to substantiate their claims. We have heard that they test "to the limit of detection". We see this as extremely misleading to the public since the products clearly cannot be guaranteed to be GM free. Once again they are operating in an environment where regulations lack precision. Presumably because these companies are doing what the pressure groups want they are not scrutinised with anything like the same vigour.

5. *The issue of thresholds for GM impurities in Seeds*

7.1 If thresholds are to be set we believe that the question of why we need them should be addressed rationally (we have already concluded that the current climate makes this impossible). Nevertheless, as we see it, there is no case for thresholds based on safety to the environment or health. In this incident ACRE, FSA and English Nature confirmed this opinion.

7.2 One issue of particular concern was the risk that the crop could cross-pollinate other rape crops. Shortly after the Government's announcement of the issue, the Minister said that the crop was sterile, and this caused consternation. How could a crop that had cross-pollinated in Canada not do so in the UK? The Minister was substantively correct. Officials asked us for a technical answer immediately after his statement so that response could be put in the Commons library. We replied the same day, and would be pleased to repeat this explanation to the committee (diagrams are attached at Appendix 4 [not printed]).

7.3 Advanta believes the decision on acceptable levels should be an issue of seed quality. This is exactly the conclusion that we believe the Government reached when it decided the event in question should be handled by MAFF rather than DETR (we were informed of this on 9 May). We do believe that there is also an issue of choice which makes it appropriate to ensure levels are at a minimum and seed is as pure as possible. In other words, precisely the same labelling issue we have seen in food.

Consistent with the threshold for GM content in "GM-free" food, Advanta UK believes the threshold limit for accidental GM seed impurity in batches of conventional seed should be 1 per cent. We believe that tests to confirm this level can be done accurately with a high degree of statistical certainty, within a timeframe that will allow the turnaround of seed between harvest and sowing, while at a cost that is affordable to UK agriculture. We make these points because it is vital for the UK farming sector, and for ordinary consumers, that whatever threshold is agreed is reasonable, affordable and consistent for both authorised and non-authorised genetic events.

7.4 The evidence from Friends of the Earth in the previous report of this committee amply demonstrates that sweeping statements are being made in areas of intense technical complexity. Here they stated that testing could allow the detection of levels as low as 0.001 per cent. We would like to comment in our evidence as to why we see 1 per cent as a sensible level. However, as an example, we have calculated that in order to provide approaching absolute statistical certainty that an impurity level was at the 0.001 per cent level in the seed that Advanta is preparing for sale next year in Europe, we would need to test somewhere in the order of 9 billion seeds.

7.5 In the attachments (Appendix 6 [not printed]) we show the sample sizes that are required in order to give statistically valid test results at various levels of contamination. If the committee desires, these can be explained in more detail on 18 July.

6. *Can thresholds be achieved?*

8.1 We believe that realistic thresholds can be achieved by the industry, but these may need to take into account the crop species and hybrid vs non-hybrid seeds. Existing seed regulations already do this and there is no reason why GM purity regulations could not do the same. Obviously one of the key issues will be separation distances and this was a great talking point in the incident under review. We were surprised at the apparent inability of Government to answer what we regarded as fairly obvious reasons for the difference in the separation distances which existed for the hybrid crops in question and for the SCIMAC trials.

8.2 We have included attachments (Appendix 5 [not printed]) to try to explain the key differences and will readily reiterate these to the committee. Where GM has been released, wide separation distances can help to create absolute minimum levels of GM impurity (as in this case, less than 1 per cent). They cannot guarantee zero impurities and have never been designed or claimed to do so.

7. *Standard testing processes and protocols for GM impurity in seeds*

9.1 The testing method most commonly used in the food industry is the Polymerase Chain Reaction (PCR) test, which is a DNA-based methodology. It was just such a PCR test, at a government laboratory in Germany, that first brought to light the incident in question. An alternative test method, which is also used in Herbicide Tolerant (HT) GM detection, is bio-assays such as a "blotter test" or a "spray test". However, these tests take 10–14 days and 3–4 weeks respectively to produce results, whereas a PCR test can be completed more rapidly. Seed companies face extremely short turnaround times between harvest of one crop and the sowing of another (particularly in the UK with its large percentage of autumn sown crops). For this reason, Advanta is of the view that the PCR test has to be adopted as the standard methodology for assessing compliance with regulations on GM impurity in conventional seed.

9.2 At various times, many commentators (including independent scientific journals, officials of DETR and publications from MAFF) have noted the tendency of these tests to give unreliable results if protocols are not robust. It was the known frailty of the test that led Advanta initially to be sceptical about the German results. Only after conducting confirmatory tests and sending its own scientists to audit the methods and procedures of alternative labs did it feel confident to accept the findings.

9.3 Furthermore, another disadvantage of the PCR method is that it is essentially qualitative, testing only for the presence or absence of substances that may indicate GM contamination. Various alternative approaches have been pursued to allow the quantification of any results that indicate a positive presence. Advanta believes (after a thorough assessment of these methods in the course of deciding what it will do for next year's crop) they can be used to assess the quantity of a GM impurity. However data will only be valid if seed samples are of an appropriate size for the threshold level being sought and the test is replicated so the sample can be shown to be representative of the whole seed batch. Advanta would be disappointed if the Government had not already made similar assessments itself, but if not, would be pleased to share its conclusions in order to speed up the process.

8. *UK Chronology and Key Facts*

10.1 There has been considerable Parliamentary interest in the events that occurred leading up to and after Advanta UK went to the Government for advice and guidance on this issue. At this stage, Advanta UK believes that time would be more constructively spent on analysing the regulations and on framing workable rules.

10.2 The event has put our reputation with our merchant and farmer customers under considerable strain. Our employees have been physically and mentally exhausted and have been forced to endure unacceptable levels of stress as a result of the incident.

10.3 Financially, we will spend several million pounds in order to settle compensation payments. Now our priority is twofold:

— to rebuild the relationships with our customers and the morale of our staff;

— to co-operate in the framing of regulations by contributing our experience, so that lack of guidance can never put us in this invidious position again.

10.4 Nonetheless, we understand the committee may wish to understand the events that occurred. The company believes that it has broken no laws or regulations and that it has acted swiftly, openly and responsibly from the moment the incident in question was first brought to its attention. We have included a chronology below that is extracted from our detailed files that we have kept on the whole event. Each entry is supported by written minutes made at or soon after the date of the meeting or contact.

10.5 This chronology should be read in the context of four key facts:

(1) The potential problem was highlighted by industry but the regulatory authorities failed to adapt the regulatory framework in time to manage the incident in question adequately.

(2) Less than 1 per cent of the Advanta UK Spring Oilseed Rape seeds planted in this country contained GM material. The area of crop with the impurity represents only 1 per cent of the UK rape acreage. The incident in question therefore constitutes a trace impurity in a tiny fraction of a conventional UK crop.

(3) Advanta UK, the UK Government and its advisory bodies (FSA, ACRE and English Nature) are all convinced that this trace impurity of GM in what is a conventional crop poses no threat to human health or the environment.

(4) The UK Government has made it clear that no regulations or laws have been broken at any time by Advanta UK.

10.6 1998

The affected seed batches were grown during 1998 by Advanta Inc in Alberta, Canada for import to the UK under the OECD seed certification scheme. For its conventional hybrid crops, Advanta Inc's minimum separation distance from GM crops (1,600 metres) is twice the distance required by Canadian law (800 metres). In reality, the actual separation distance in the relevant year was never less than five times the legal minimum, namely 4,000 metres, and this was the de facto minimum separation distance for Advanta Inc. At no time did Advanta Inc have any reasonable grounds to suspect that accidental contamination of its hybrid crops might have occurred.

10.7 1999

As the use of GM crops in North America increased (in 1998, 35 per cent of Canadian crops were GM, in 1999 the figure rose to 55 per cent), so in early 1999, on the basis of precaution rather than any suspicion of possible contamination, Advanta Inc decided to shift Hyola production to GM free areas such as Montana, USA, New Brunswick, Canada and New Zealand. As a result, there is no GM impurity in the 1999 harvest of Spring Oilseed Rape seeds delivered to Europe.

10.8 2000

Friday 31 March 2000.

Late afternoon, Herr Petersen, agent of Advanta UK in Germany, received a phone call from German Government official.

10.30 pm, phone message left by Herr Petersen for Advanta UK about possible, low-level (less than 1 per cent) GM presence in conventional Hyola 401 Spring Oilseed Rape from the 1998 harvest, discovered by a laboratory in Freiburg, Germany, using PCR tests.

Monday 3 April 2000.

Efforts made to obtain further details on harvest year, lot numbers, etc, to see if UK batches of seed were affected; discussions about the reliability of the PCR test method; agreement to halt sales of Hyola 401 in Germany on a precautionary basis.

Tuesday 4 and Wednesday 5 April 2000.

Confirmation that Hyola 401 of 1998 harvest affected; further tests commissioned from a separate German laboratory to back up original results on Hyola 401 and to investigate possible contamination of Hyola 38 and Hyola 330 from the 1998 harvest because they were grown in the same region of Canada.

Thursday 6 April 2000.

All sales of Hyola 401 from 1998 and 1999 harvests halted in the UK on a precautionary basis (1999 harvest subsequently proven to be clear).

Wednesday 12 April 2000.

7.31 pm, new information arrives by e-mail from Canada on Hyola 38 and Hyola 330 from the 1998 harvest; impurities detected in preliminary bio-assays.

Thursday 13 April 2000.

Advanta UK meets with its lawyers (advice privileged); new information from Canada reviewed; decision taken to halt all sales of Hyola 38 and Hyola 330 from the 1998 harvest.

Friday 14 April 2000.

On legal advice (privileged) and through an industry body, Advanta UK requests meeting with UK Government; Advanta UK drafts a press release (attached at Appendix 7 [not printed]) in anticipation that Government will want to make an immediate public statement on 17 April.

Monday 17 April 2000.

First meeting between Advanta UK and MAFF and DETR officials; briefing document tabled (Appendix 1 [not printed]).

Tuesday 18 April 2000.

Advanta UK advised that GM contaminated plants almost certainly "male sterile"; Advanta UK prepares a purely reactive press statement, given the advice from DETR and MAFF officials; FSA calls Advanta UK to follow up the meeting with DETR and MAFF officials.

Wednesday 19 April 2000.

Advanta UK calls DETR and MAFF to tell them that the GM contaminated plants are almost certain to be "male sterile"; DETR says that "Ministers have been informed about the incident, that eyebrows were raised and that there was no widespread panic"; MAFF Seeds Division says that there are "no further issues for it to investigate".

Monday 24 April 2000.

Advanta Inc calls from Canada with the final test results.

Tuesday 25 April 2000.

Advanta UK advises DETR that about 90 per cent of the GM contaminated plants were resistant to Roundup and about 10 per cent to Liberty, which tallied with its understanding of the 1998 Canadian commercial GM crop; the 1999 crop is clear and the contamination of the 1998 crop is below 1 per cent.

DETR tells Advanta UK that they do not need any more information from the company, that the Department has written legal advice that no offence has been committed, that no further action will be taken, that DETR will write to the European Commission to request proper regulation and that Michael Meacher is on holiday all week.

Wednesday 26 April—Monday 8 May 2000.

Series of phone calls, carefully minuted by Advanta UK, between the company and officials; officials expressed concern about possible leaks.

Tuesday 9 May 2000.

DETR advises Advanta UK that MAFF is now playing the lead role; MAFF advises that a press statement will be necessary, probably on Thursday 18 May, and that a meeting between officials and industry groups (not Advanta UK) is to be held on Friday 12 May.

Friday 12 May 2000.

Industry representatives meet with officials; Advanta UK not present but submits a document setting out a series of questions that Government needs to answer before the matter enters the public domain (attached at Appendix 2 [not printed]).

Monday 15 May 2000.

Advanta UK's distributor in Sweden discovers some contaminated seed has been sown there; the distributor informs the Swedish Government and then Advanta UK; Advanta UK informs MAFF.

Tuesday 16 May 2000.

Swedish Government issues press release.

Wednesday 17 May 2000.

MAFF issues press release; Advanta informed about press release one hour in advance of publication.

Thursday 18 May 2000.

Information pack sent to seed merchants who are Advanta UK customers.

Monday 22 May 2000.

Advanta UK informed that planned meeting with Baroness Hayman had been postponed; Advanta UK's free information helpline for farmers set up.

Tuesday 23 May 2000.

Advanta UK proposes an independent panel on farmer compensation to Baroness Hayman by letter.

Thursday 25 May 2000.

Seed industry and related bodies meet with Baroness Hayman (Advanta UK not present).

Saturday 27 May 2000.

Nick Brown announces to the media that he wants a "plough in" (although he recognised publicly at the time that he had no power to order it as he knew the crops posed no threat to human health or the environment).

Thursday 1 June 2000.

Advanta UK meets with Nick Brown and Baroness Hayman; Advanta UK reiterates its compensation proposal (company minutes of the meeting attached at Appendix 9 [not printed]).

Friday 2 June 2000.

Advanta UK press release announces the compensation proposal, including the independent panel.

Thursday 8 June 2000.

Opposition Day Debate on the incident in question; European Commission confirms Area Aid payments available for ploughed-in crops.

Wednesday 5 July 2000.

Advanta UK issues press release, less than five weeks after it was set up, announcing that the independent panel has agreed a compensation package for all farmers affected, with the agreement of the NFU.

9. *Other Key Issues*

Separation Distances

11.1 The incident in question raises legitimate questions about the separation distances that should exist between GM and conventional crops to prevent unwanted cross-pollination from the GM plants, particularly in relation to the existing farm-scale field trials of selected GM crops.

11.2 It must be stressed that many different factors, of which separation distance is only one, affect whether cross-pollination will occur in an open field setting. These different factors include the respective times of flowering of the two crops, wind direction, species compatibility and the lifespan of the pollen itself. Nevertheless, given a particular set of circumstances it is possible to make a rough calculation of the likely separation distance needed to achieve a given de minimis GM impurity level in a nearby conventional crop.

11.3 Advanta UK is of the view that it is correct to keep under review the separation distance in any setting where cross-pollination between GM plants and conventional plants is not desired. However, the incident in question is of a very different nature from the UK Government farm-scale field trials, and the company has no firm view on the appropriate separation distances for these trials.

Crop Sterility

11.4 One of the concerns raised by the incident in question, before farmers were assured of compensation and began to plough-in the affected crops, was the theoretical risk of cross-pollination from the tiny number of GM plants in the affected fields once these plants had flowered.

11.5 For technical reasons, and assuming that some of the affected crops had come to flower, the chances of any of the GM plants becoming fertile and therefore capable of producing pollen were very small indeed. All of the GM plants concerned were hybrid specimens and were "male sterile" plants. They could only have been rendered fertile if a "restorer gene" in pollen from a crop of the same species had been transmitted to them. While this possibility can never be ruled out in an open environment, the chance of this happening was minuscule.

11.6 For further explanation of the technical aspects of hybrid crop fertility, please see the company's statement and diagrams, attached at Appendices 3–5 (not printed).

Compensation

11.7 Advanta UK, while not admitting legal liability for the incident in question, has from the outset been concerned that its ultimate customers, the farming community, should receive adequate compensation for any economic losses suffered.

11.8 Advanta UK strongly supported the successful application to the European Commission for Area Aid payments to be made to farmers inadvertently growing Spring Oilseed Rape from contaminated seed despite the affected crops having been ploughed in. In addition, Advanta UK, with the support of Government and the National Farmers Union, created an independent panel to advise on the compensation necessary to supplement the Area Aid payments.

11.9 This panel has now completed its work, less than five weeks after it was created. Advanta's offer of compensation has been agreed by the panel and endorsed by the National Farmers Union as fair and equitable. The sums offered by Advanta are £337 per hectare south of a line between Carlisle and Newcastle and £370 per hectare above this line, reflecting the likely higher yields of Spring Oilseed Rape in Northern England and Scotland.

ECONOMIC THREAT TO FARMING

11.10 Although Spring Oilseed Rape is a small crop in the UK, and the level of contamination was small, this incident has potentially serious implications for all other crops. Unless reasonable regulations are put in place to ensure that GM impurity in conventional crops is kept to a fixed threshold, and unless reasonable testing processes and protocols are created for demonstrating that compliance has been achieved, then seed producers and in turn farmers and ordinary consumers will face enormous costs and uncertainty.

11.11 In the case of Spring Oilseed Rape, a failure to tackle the regulatory loophole may mean this seed not being available at all in the UK.

10 July 2000

Examination of Witnesses

DR DAVID BUCKERIDGE, Director, and MR MIKE RUTHVEN, General Manager, Advanta Seeds UK, examined.

Chairman

1. Gentlemen, welcome to the Committee. You will know that we have done an inquiry into some of the technical issues involved in GM foods which was published some months ago. In the light of more recent developments—and, of course, there has been one since, which is the trashing of the crop down in the South West—we wanted to come up to date, and clearly, as you have been in the eye of the storm, we thought it would make sense to have you along to talk to us. I am going to ask you a couple of questions to begin with. For the purposes of the record, would you identify who you are and your position in the company as a preliminary. My first question is: do I deduce from your evidence that you are contemplating legal action against the Ministry of Agriculture? You had contemplated a scheme of buying and exporting the crop. The Minister then gave it as his opinion that it should be ploughed in, and that gave you no alternative but to follow that line and to compensate. Just for clarification, are you contemplating a legal case against the Department?

(*Dr Buckeridge*) I am David Buckeridge. I am a director of Advanta Seeds. In response to that question, our whole focus at the moment, Mr Chairman, is to look after the farmers who have inadvertently planted this crop, and to work on the compensation packages that we have proposed and have been supported by the farmers' unions. We have not contemplated any further legal steps at this point in the proceedings.

2. Have you ruled them out, or does that remain a possibility?

(*Dr Buckeridge*) We have not ruled them out at this stage.

3. Could I refer you to your very helpful and quite forthright submission? You give the history of how the contamination occurred, and in paragraph 2.1 you say: "At a minimum, thresholds for accidental GM impurity need to be set, standard testing methods need to be stipulated and results should be analysed by an approved and consistent statistical method." Could you explain? Your argument seems to be that we are going to get contamination. I am using the word "contamination" because I cannot think of a better word. We are into a world where, because GM is so heavily planted, this is going to happen. You are a conventional seed company, but you have got to deal with this. Have I summarised it correctly? Would you like to tell me how you perceive the problem?

(*Dr Buckeridge*) I think you have summed it up very well. We know as a conventional seed company—and we have experience of producing seed for a number of years; the company is over 100 years old—never in the production of seed has any seed company ever striven for 100 per cent purity. All seed production methodologies strive to keep impurities of any type to a minimum level. There are strong regulations around things like weed seed impurities, impurities from other varieties which are entering the crop through the natural course of cross-pollination, which occurs in the open environment where the seeds have to be produced. It is our belief that, with the level of GM plantings on a global basis, and bearing in mind that the seed industry is a global industry, seed companies can adhere to all the regulations which are in place, follow all the purity guidelines, as was the case in this particular incident with the rape, and still find themselves in a situation where, accidentally, very low levels of GM impurities may occur. For all sorts of reasons, for the operation of our business, for farmers' confidence and for public confidence, it is important that there are regulations in place which state what the threshold for that impurity should be, just like we state for all the other seed impurities; that tell companies what method should be used to analyse for impurities, because there are some questions of reliability in the methods; and further, make sure that those impurity tests are subjected to a valid statistical analysis. We do not believe it is any good to come along with one test result for a large batch of seed and say, "This seed is GM-free" because we believe that the testing should be done on a sampling basis and should be statistically valid if people are to have confidence in the results. We believe that should be a matter of regulation, and we believe the need for that regulation is very urgent.

4. You say, "This incident is proof positive that despite strenuous efforts to maximise seed purity and despite full compliance with seed purity regulations, seed can enter the UK market with trace levels of impurity." You also say, "Trace levels of GM impurities will occur now that various parts of the world have accepted the value and safety of GMOs. This is universally recognised . . ." Are you sure it is universally recognised?

[**Chairman** *Cont*]

(*Dr Buckeridge*) I think that recognition is restricted to the seed industry. I think it is recognised in the seed industry that this is the case. Farmers understand that cross-pollination occurs as a natural phenomenon. Seed crops for production rely on efficient cross-pollination. It has to occur. What the seed company is trying to do is to make sure that cross-pollination is only occurring with pollen which is intended to cross-pollinate. But I think the seed industry universally understands that there will always be trace levels of impurities which will accidentally cross-pollinate, as was the case with this rape seed.

(*Mr Ruthven*) Could I add to that, Chairman? Michael Ruthven, General Manager of Advanta Seed UK and a director. This is recognised universally, the word we have used, in the existing seed regulations, because they do not call for 100 per cent purity, either genetically or mechanically.

5. In 4.1 you state, "From our perspective, the incident also serves to demonstrate that communication of the facts, allowing individuals to make informed decisions, is virtually impossible in our society today. This is especially true where the subject matter is highly technical." We have just had a lot of excitement about the genome. I do not get the impression that it has been impossible to have a sensible debate on the genome. What is special about your sector which makes it so difficult that you should feel obliged to issue this cry of anguish?

(*Dr Buckeridge*) Our frustration, Mr Chairman, has been that there were, we believe, important facts about this case that became very difficult to communicate because of the intense media interest which was generated. It is fair to say that when journalists are putting together stories, they need to cut to the chase very quickly to get the facts over through the method of communication they are using, and that is not conducive to explaining all sorts of technical arguments which came out, like the accuracy of the testing, why the testing is unreliable; like the issue of whether the crop was contaminated from mechanical mixing in a factory or whether it was to do with cross-pollination. Those to us were very important facts, but it seemed very difficult to communicate those as a company, and even more difficult for us to communicate with the farmers who were inadvertently affected by this to get clear information to them.

6. You say, "Advanta believes that a lack of understanding of the basics of agriculture existed in some quarters of the Ministry . . ." Which quarters do you have in mind?

(*Dr Buckeridge*) On the specifics, we were surprised at the questions we received on issues like whether the crop was sterile. We were asked for technical follow-up on those issues. We had no problem with providing that, and we did provide it, but it just seemed to us that through the course of events we felt we had given a thorough briefing and that briefing did not always come through in the statements which the Ministry was making. To be fair, everybody was operating in uncharted water on this issue. We have made those comments. We were a little concerned about the technical understanding of some of the issues which we felt were germane to the particular incident that was in hand. But we also concede that we were in uncharted water; it was a unique experience, as far as we know.

7. The whole thrust of your report is to say, "We have to have a regulatory framework. We have been demanding it, and we must have it. People have been dilatory. We shall have harvested one crop and are about to plant another, and still nothing has happened." Yet in paragraph 4.3 you say, "We doubt whether it will be possible to frame sensible and practical legislation in the wake of this event and strongly suspect that this will lead to a withdrawal of certain products from the UK market . . . yet another blow to the competitiveness of UK agriculture." Either you do want regulation or you do not, and if you do want regulation, why do you say we will not be able to have sensible and practical legislation?

(*Dr Buckeridge*) We certainly do want urgent regulation. Our observation is looking at the types of discussion that have been going on on things like thresholds, and those discussions do not appear to be rooted in the facts of the matter. They appear to be rooted in an emotional drive to get to a lower and lower threshold, but without necessarily a technical justification to say why one per cent is better than five per cent, for example. There has been a lot of debate about what thresholds should be, as you know from your investigations into food as well. With this incident, at a very early stage there was a very clear communication from the Ministry to us to say, "We do not perceive a threat to the environment and we do not perceive a threat to health." In that situation, if we are looking at thresholds, we are trying to do those for the protection of people with concerns about this technology. We would like to see thresholds set at sensible levels that can be measured, but we would like them to be set in an unemotional way and a factual way, and we feel that the debate is going down more of an emotional concern about the lowest level one can get to.

Mr Jack

8. You have mentioned, Dr Buckeridge, your understanding of the sensitivity of this issue. You have talked about purity, you have talked about testing. Why did it take a German laboratory to tell you that there was a problem? Did you not test on a random basis for your own peace of mind the seed that was produced to check if this problem could occur?

(*Dr Buckeridge*) The reason we adopted the approach we took was that our Canadian business which produced the seed was aware that there was a sensitivity around GMs in Europe. There were discussions about that, and the strategy it chose to adopt was to use extremely wide separation distances to avoid the risk of cross-pollination. In Canada the regulations stipulate that an 800 metre separation distance should be used for a seed crop. In the case of this crop, it was grown with a 4 km separation distance, so five times the regulatory standard. The reason it went for separation distance as its mode of minimising risk rather than tests was because it was concerned about the reliability of the available tests, particularly in a brassica crop. One of the concerns

[**Mr Jack** *Cont*]
which had been widely expressed, not just by us but by scientists in general, is that the testing methodology for DNA testing is prone to give false positive results, because it is possible that it will detect contaminants that are not from the seed at all, just dust and other matter.

9. There are two tests, are there not? In your evidence you talk about the PCR method, but you also talk about another method. Could you not use both?

(*Dr Buckeridge*) We decided at that point in time that the best testing method that was available to us to achieve good purity was very wide separation distances. That was the decision that the business made at that point.

10. In spite of the fact that you knew that the seed would be tested at the other end?

(*Dr Buckeridge*) I am sorry. I do not understand the question.

11. You know the seed business. You have told us you have been in it for 100 years. People test what they receive. You must have known that people would be testing when they bought your product, yet you leave yourselves wide open to a phone call from a German laboratory to alert the world to a failure of the previously described regime.

(*Mr Ruthven*) Could I just pick you up on one point? You said that we test. We do not test seed that is coming into the country. It is already certified as pure in accordance with the existing seed regulations when it is received.

12. I was more concerned about the seed that left, given the sensitivity which your evidence quite clearly established in your mind about this new area of science as applied to agriculture, and the sensitivities already exhibited in the market place to which you were exporting. I find it surprising that nobody bothered to check a sample, irrespective of the regulation, before it left.

(*Dr Buckeridge*) We can obviously only report the facts of what happened, and in 1998, which was when this seed was grown, it was the judgement of the Canadian business that the separation distance it had used, which was five times the regulatory standard, would lead to a situation where no impurities would be present. It was not a routine part of its Canadian testing programme to test, and therefore it did not do so on this seed.

13. Let us move on to the timescale of the reaction. You found out about this on 31 March. On 6 April your evidence tells us that you decided on a precautionary basis to stop the sale of these seeds in the United Kingdom, but it took you until 14 April to get in touch with MAFF about this. Why was there such a long delay? Why did you not pick up the phone straight away and say, "We've got a problem"? Your evidence says that when you rang MAFF everything was cloaked in mystery. You requested a meeting and would not tell MAFF what it was about. Why the cloak and dagger approach?

(*Dr Buckeridge*) Yes, we found out about this through a telephone call from an agent which sells the seed for Advanta in Germany. It is not a part of Advanta's business. The agent left us a message to say that a university lab had detected a GM presence in one of the Hyola varieties. This incident involves three different varieties. So at that point we knew that there was a potential issue in one of the varieties. At the same time as receiving that information the manager in the UK contacted the Canadian business on that Friday night. The Canadian business expressed extreme surprise because of the isolation distances that they had used, and also expressed scepticism about the testing method that the German university was using. The agent himself took the initiative early the next week to go to another German laboratory to try and verify the test, again using this DNA testing, this PCR method. The Canadian business at that point, because it was sceptical about the test, early the next week decided that it would instigate a longer term test, looking at whole plants to see whether there was this herbicide resistance in those plants. By the 6th those tests had been initiated. The other practice that we had to set in train was checking through the seed lots which had gone to Germany to see whether they had gone to any other countries. So we were not in possession of information on the 31st that we had a problem in the UK. We were in possession of one sample result from a German laboratory with, in our view, a questionable method. What did we do? We tried to verify that result as quickly as possible using the same method but with a different lab, and that was done by our agent in Germany. We instigated our own tests, the first of which was ordered on 31 March. But those tests were the type of test which took a longer period. We did not feel that we could talk to the DETR before the Ministry of Agriculture with a situation where we did not fully understand the problem. When we checked the seed batches, it came to our attention that there were two other varieties that were grown in close proximity to where the crop with the alleged problem was sitting. We believed that it was worth checking those batches at that point. We did not know there was a problem, but there was enough suspicion to think that there could be. Those were also put on test runs early the next week, somewhere around 4 or 5 April. It was not until those tests came back, which was on the evening of the 12th, that we had enough information. We did not know the level of the impurity but we had enough information to know that it was a very low level because of the tests we had done, and we also felt we had enough to go and talk to the Ministry and say, "We believe there is a genuine issue here." We talked through our trade association because we could not find clarity in the law, and we had taken legal advice at this stage, on the 13th. We were not clear whether this was an issue of environmental law or whether it was an issue of seed purity. To us there seemed to be a gap. We took legal advice, we talked to the trade association to seek their advice, and on the 14th the trade association made contact with the Ministry to set up a meeting. The Ministry reacted very quickly and arranged a meeting for the Monday.

14. Was the meeting that took place on the 17th a satisfactory meeting?

(*Dr Buckeridge*) Maybe it would be best for Mr Ruthven to answer that because he was at the meeting.

[**Mr Jack** *Cont*]

(*Mr Ruthven*) The Ministry, as Dr Buckeridge said, replied extremely promptly. In hindsight we feel we should have let the officials know what the subject matter was, but we felt the previous week that a telephone contact mentioning part of the subject would be unsatisfactory. Perhaps that was not, in hindsight, the best decision. We met with the Ministry. We made notes of the meeting immediately at the end of the meeting. I will just refer to my notes. The main points which came out of the meeting were as follows. There was agreement between us and the officials that the PCR tests were not the most reliable and that the best results could be obtained from what we call bio-assays, the alternative testing method that Dr Buckeridge just referred to. The officials believed there was no known threat to the environment at this stage. If there was going to be a threat, it would emerge at the flowering stage of the crop. The only guidance available in the absence of any regulation was the one per cent provision in the food regulations. We were advised it would be possible for the UK to form its own regulations and guidelines, and the officials were going to write to the EU in any event. The officials needed to obtain legal advice before they could give us any further advice on this issue. They advised us strongly to stop sales, which of course had already been done. They needed to consult Ministers. We stressed in that meeting the urgent need for a response, because if there was going to be a crop destruction of some sort, this was an opportunity for us to deal with what could be quite serious—

15. Did the question of crop destruction emerge as a proposal in the course of your early discussions?

(*Mr Ruthven*) That was asked for by us during the course of the discussions at that meeting.

16. You asked the question or you asked for the crops to be destroyed?

(*Mr Ruthven*) We did not ask for them to be destroyed. What we said was, if it was going to be necessary, which we did not believe, we would need to know promptly, because that would give farmers the opportunity to re-sow alternative seed and would mitigate the cost problems we would possibly face. That was the reason for the question, and we did ask for an urgent response if there was going to be any need to destroy the crop. Quite rightly, the officials said they needed to consult with their Ministers. We interpreted that meeting as one with no panic. Our feeling quite strongly from that meeting was that, because we were stating that the impurity levels were believed to be below one per cent, there was no cause for real concern. That was the feeling we got from the officials and was our own feeling from the meeting. We believed that there was a tacit understanding that it should not enter the public domain. I know some of these issues have been reported in the press and elsewhere, but at no time have we been asked specifically to suppress any information, but we did feel there was a tacit understanding between us, and as a result of that understanding, when we got back and I reported to my colleagues, we stood down the team that we had had standing by, both to communicate with our customers and if necessary to deal with the media.

17. You mentioned the question of the destruction of the crop. In your evidence you indicated that you arranged for a scheme to segregate the crop and harvest it for export. Were you taken aback when after all the protestations of safety from MAFF suddenly they hove into view with this proposal that the crop should be destroyed? What was your opinion of that?

(*Mr Ruthven*) We went through a process of quite some time in discussions with the Ministry, and we consistently held the view as a business that destruction of the crop would be an over-reaction. We sought with other members of the industry to find means of dealing with the crop when it came to harvest, and as late as 25 May the industry was in consultation with Baroness Hayman. The announcement by Nick Brown on 27 May caught us completely off guard. It was a Saturday. We had no staff available to deal with it. We heard about it on the one o'clock news on the radio, and the first thing we really knew was journalists trying to contact us. That was a complete surprise to us.

18. What did the Ministry say was the excuse? That was on the 27th, you said. You were trying to get a meeting with Baroness Hayman on the 23rd and suddenly it is cancelled. Did they tell you why?

(*Dr Buckeridge*) They just said it was to do with diary pressure.

19. Any idea what this great pressure was?

(*Mr Ruthven*) No. We immediately wrote to Baroness Hayman to express the points that we would have hoped to have raised in the meeting with her.

(*Dr Buckeridge*) If I can put it in perspective, Mr Chairman, I think, as we said in the written submission, we were not saying that the idea of segregating the crop to take it out of food use would be easy, but we had excellent cooperation from other members of the food supply chain in trying to achieve that, so it was something of a surprise when the advice was given on the 27th. But I do think it is important to put it in perspective and say we were not proposing some kind of very easy solution that would just take the problem away. It was going to be complicated. It was a tiny area of crop involved. It was very geographically spread around the country. Putting that together in an identity-preserved way to export it for use in countries where there was not the same GM sensitivity would not have been an easy task, but that was the track that we were going down until the 27th. Of course, after the 27th the enthusiasm for that waned fairly quickly.

Mr Mitchell

20. I am in danger of what the press do really, cutting to the chase before we establish the facts. Can I come back to the basic issue of the particular crop? Have you established why there was contamination in Hyola 38, 330 and 401? Was it the same batch?

(*Dr Buckeridge*) I cannot categorically say to you we are 100 per cent sure, but all the technical evidence points to the fact that these crops received very small levels of pollen which had originated from a commercially grown GM crop in Canada and has

[**Mr Mitchell** *Cont*]
somehow travelled across these wide isolation distances. Would you like me to explain why we think that is the case?

21. Yes, please.

(*Dr Buckeridge*) If you look in the appendices, there are some diagrams illustrating sterility. Appendix 4 is the easiest one to turn to. In those diagrams it shows how this crop is produced. Basically you have a hybrid crop. There are rows in the field. Some are what we call male plants, which produce the pollen, and next to them are rows of female plants or, as they are described here, male sterile plants, which receive the pollen and the seed is produced from those plants. In a hybrid production field what you have to do is make sure that your female plants are not capable of producing any pollen at all, so that all the pollen they receive comes from the male plants in the row next door. When that transition is made, the other thing that happens is that pollen coming across restores the fertility of the seed that you are going to harvest, so you know that if the pollen has not come from those male plants in the production field, the seed that you harvest will not be fertile. There was a lot of discussion about this and a lot of confusion about it, but basically, to get successful hybrid production you have to get 100 per cent cross pollination. The male plant has to provide the pollen; the female plant has to receive the pollen and then produce the seed. That is how you get hybrid vigour. You hear about hybrid vigour in your roses in the garden, bigger plants, which is what farmers want. If a bit of pollen comes in from outside the seed production field, it is highly likely that it will not have the ability to restore the fertility of the seed that you are going to harvest. So what you have to look for in these contaminants we found in this seed in Germany is plants which are not producing any pollen. If the pollen in the seed field has come from the outside, the seed that you plant in the UK or in Germany, the contaminant, will not produce any pollen. If the pollen has come from inside the seed field, it will be fully fertile. So what we did was we took these contaminant plants—what we call "off types" in the seed industry, things that should not have been there—and we grew them on in the laboratory in Canada to see if they would produce pollen. If they produced pollen, we knew that they were most likely to have come from a plant that had received the correct pollen. If they did not, we thought it would have come from pollen that came from the outside. All of those plants in the lab showed severely compromised pollen production. They produced levels of pollen which were a fraction of the normal that you would expect in a crop. They also produced deformed parts where the pollen comes from. In a flower you have things called anthers in the flower inside the petals and they fill up with yellow pollen. You see bees going in there and rubbing themselves on the pollen. In these plants, those bits were severely reduced and were not capable of producing any pollen. That told us that in the seed field they had been fertilised by plants which did not bring this gene which restored fertility. That is the evidence that we believe leads us to say that any contaminants, albeit at the low level they are in these fields in the UK, will firstly produce massively reduced levels of pollen, if any at all, and secondly, it is quite likely that the pollen they produce will not be able to fertilise something else because it has been produced on a structure which is very deformed. What you see in the pictures are actual photographs of those plants. If you look at the picture of the plant on the right-hand side at the top, you will see it has short, stubby bits on it compared to the one on the left-hand side, which has long fully formed ones. Those are the male parts of the plant. The one on the right is not capable of producing pollen; the one on the left can. When those two cross together, that is how you make hybrid seed. If you look at the picture on Appendix 4, in the second picture at the bottom it says "Contaminant Seed" and you will see those same physically deformed structures. That is a photograph of what we grew on in the lab in Canada. It shows us that that plant is not going to be capable of producing any pollen.

22. That is very interesting. It is also very sexy. I am surprised at the virility of the male sterile plant.

(*Dr Buckeridge*) The analogies are all there, but I have tried to steer clear of them.

23. You are satisfied with that explanation, are you? What had been grown in those fields the year before?

(*Dr Buckeridge*) All the fields where we produced the seed had never grown a GM crop. That is part of our protocol within the company. As well as wide isolation distances, we always use fields which have never grown a GM crop. If you look at what we did the next year for seed production, we faced a situation in Canada where 55 per cent of the crop is now GM, and in our judgment it was not possible to find fields where we could either achieve the isolation distance we wanted or guarantee that a GM crop had not been grown before. If you think about rotation of crops, it is very likely that, as GMs have been in Canada since 1996, by the year 1999 some fields will be re-used for growing—

24. So where are you shifting it to?

(*Dr Buckeridge*) Currently we are doing production in New Zealand, we are doing some production in eastern Canada—because this is all prairie Canada where this production was done, so we are probably thousands of kilometres away—and we did some production in Montana in 1999. All of those batches were checked as a precaution when we checked the 1998 seed, and we did not detect GM in any of them.

25. Given the spread of GM production in North America, and indeed, given the more relaxed attitude towards it than prevails here, should you not have tested this stuff as it came in? Could you test it as it came in?

(*Dr Buckeridge*) If I can go back to the answer I gave to Mr Jack, in our opinion the testing that was available to us was somewhat unreliable.

26. Is it not routinely tested in the industry?

(*Dr Buckeridge*) For GM content?

27. Yes.

(*Dr Buckeridge*) No, it is not routinely tested.

28. So no section of the industry, you included, routinely tests?

[Mr Mitchell *Cont*]

(*Dr Buckeridge*) All seed companies now are thinking about this issue. If you take our company, for example, we have just been through a thorough appraisal of what we should do going into next year. I think we will have routine testing as a part of our protocols for next year. We are struggling at the moment to work out what that testing should be so that we can give a reliable assurance around these sorts of issues, bearing in mind that we know we cannot guarantee 100 per cent seed purity. So we are in a dilemma now. This is why I think regulation is so important. It needs to be prescribed for the industry what the level is that should be allowed for accidental contamination, and what method should be used to detect that. I could easily do a test and show you no GM, but that would not necessarily give me as a consumer confidence that there was no GM there.

29. Given those definitional problems of the level and the test, is it possible for measures to be put in place to ensure this does not happen again?

(*Dr Buckeridge*) I believe it is possible to put methods in place which can give a high degree of statistical probability that seed batches are GM-free. I think it is impossible to put measures in place to say that seed batches are completely GM-free or 100 per cent GM-free.

30. Have you an estimate of what the cost of all this is to you?

(*Dr Buckeridge*) That is the process that we are going through at the moment. We are looking at external labs that are charging in the order of £100 a test for this type of test.

31. I meant the cost of the incident and the compensation.

(*Dr Buckeridge*) The compensation has been agreed, and the farmers' unions have recommended that to their members. If you are north of a line from Newcastle to Carlisle, it will be £370 a hectare, and if you are south of that line it will be £337. That is to do with the yield potential of the crops. There are something like 5,200 hectares involved. So a simple calculation gives you a range of what those costs will be. That is obviously the compensation itself. There are other costs which I could not give you an estimate of at the moment to do with us having had to handle this issue over the last few months, the time it has taken and the business disruption that has been caused. But the pure compensation costs are 5,200 hectares times somewhere between £370 and £337 per hectare, depending on the distribution of the crop.

32. One last question. This is a fairly combative memo. It is marvellous to see in our quiet, bucolic, little idyll in this Committee you and MAFF slugging it out in this way, but I get the impression that you feel aggrieved. The memo says you have warned several times and the issue has not been adequately addressed by the regulatory authorities. It was then stirred by panic over GM, and even now, after all the fracas, there are still no regulations at either a national or EU level, and even though the oilseed rape planting begins in August there is still no regulatory guidance on that issue. My conclusion is that you feel aggrieved about the whole business.

(*Dr Buckeridge*) I think it is fair to say we feel aggrieved. The thing that concerns us most of all is that we need to get the regulations in place. It is not just a UK issue. It has got to be an international issue. The seed industry was consulting with the Commission in October 1999 about this issue. I think someone has to make a move to get these regulations in place. What we do not want is the sort of regulation that says "You are required to check." What we need is something which says the threshold, the method of testing, and what statistical analyses should be applied to the results. That is no different to other seed purity regulations. The seed purity regulations are very clear, and they are well followed by the industry. The industry has a very good track record of following them. If we have clear, specific regulations, we can follow them to the best of our ability as an industry. Our frustration—and perhaps that comes through in the memo—is that we feel we have been saying this for quite a long time, and we are now in a situation where it is proof positive that the situation can occur, but as a company, we are just about to market the winter oilseed rape seed, which will have to go in the ground, as I am sure many of you know, at the beginning of August, and we do not have a set of regulations to guide us. So once again as a company we have now to work out a system of compliance. We think there is a gap in the law here and we think it needs to be plugged. That is our strong message. We think the plugging of that gap is very urgent.

Mr Öpik

33. Your explanation of how the pollen came across and so on reminds me of when the dinosaurs get pregnant in Jurassic Park. I am sure the process is completely different and you will probably accuse me of misrepresenting the facts.

(*Dr Buckeridge*) I have never seen the film.

34. It will just get you worried. In paragraph 4.1 you say, "Advanta believes that a lack of understanding of the basics of agriculture existed in some quarters of the Ministry and most quarters of the media." In 4.2 you go on to say, "After the government published the issue, it was impossible to communicate effectively with customers" and "journalists posing as farmers plagued our free information phone service, blocking the lines for genuine callers. In addition, pressure groups deliberately sought to distort the facts in order to boost their position against GM." That is strong, fighting talk. It sounds to me from that that you blame MAFF for creating this miscommunication, and then you blame the media for making it worse. To give you the chance to set the record straight, are you satisfied that you have traced all the seed that you have sold?

(*Dr Buckeridge*) We can probably give you specific statistics on where we are with that.

(*Mr Ruthven*) Yes. We believe we are very close to tracing. First, can I just explain that the way we sell our seed is to merchants and distributors, so we are not directly in contact with farmers. As you will know, agriculture is going through quite a difficult period, and the industry is working on a "just in time" basis, so our customers ask us to ship very often directly to farmers. When our information desk was set up on 22 May a number of our customers wanted to jealously guard the names and addresses of

[**Mr Öpik** *Cont*]
their own farmer customers. One of the reasons was that farmers are very reluctant that people should find out who they are and where they are, because there is a genuine fear among many of them that has come through in the registration process that there will be damage caused to their property and their crops by activists. We sold 2,359 bags, which are two-hectare packs. I cannot tell you the number of bags we have accounted for, but we are trying to account for the number of bags. What I can tell you is that those bags should have sown 4,718 hectares. We have accounted for 5,393 hectares. The reason for that is some of the farmers have mixed the seed with the unaffected Hyola. Some of them have used it to patch up holes in their crop of winter rape. Some of them have sown a bit of seed that they had saved on the farm carried over from the previous year. We believe there are about 6-8 farmers left to register with us. During July we are running an advertising campaign in trade journals, two advertisements in each of the three selected trade journals. We hope very much that by the end of the month we will be able to assure everybody that we have collected as much as we can. I do not know whether we will actually get 100 per cent like the contamination itself, but we are going to be extremely close to tracing all the crop.

35. You are describing some of the difficulties in terms of tracing. Those sound rather insuperable to me, because in order to find all the seed, you have to know where the patches were and everything else.

(*Mr Ruthven*) It is not quite as difficult as that, because the seed regulations require the people who are distributing seed to maintain a system of traceability. The difficulty for us would be if seed was sold to one merchant, who then sold it to another, who then sold it to another and it finally left that merchant to go to a farmer, but we believe that if we can account for the total number of bags, effectively we will have accounted for all of the sowings of the seed.

36. In the context of that, you say that you have devised a segregation process. How would that have worked, in brief terms?

(*Mr Ruthven*) We would have acted to keep all of the crops, including the saved seed, the patch seed, identified, and those would have been dealt with by the oil crushing industry as identified chain crops. The position at 27 May, when Nick Brown made his statement, appeared to introduce a new factor, which was that the farmers might not be able to sell the crop. I do not fully understand this. This could be perhaps a question of another release. If Nick Brown could have given us that advice much earlier in the proceedings, it may be that we could have recalled some of the seed or mitigated the costs further. We cannot really understand why that fact emerged as late as the 27th, and perhaps that is one of the reasons our frustration shows in the notes we have submitted to the Committee.

37. You said yourself that destruction of the crop would have been an over-reaction, which makes me feel you are probably more relaxed about this. It is a judgment. Obviously you are in the business of GM crops, so what would you say to those who say you are likely to be a bit slack about the stuff because you do not think it is an environmental problem anyway?

(*Mr Ruthven*) We certainly have not been slack about tracking it. We have done everything in the power of the business to track everything. We have dealt with it in advertising in journals, we have communicated through our merchants, we have written through our merchants direct to all our farmer customers, and we wrote, we believe, to all the customers who had sold not only the Hyola which was contaminated, but to the customers who sowed the unaffected Hyola to reassure them through the merchants. We had 248 registrations last week on our own registration system. Customers have registered a further 75. So we have had 323 registrations and I heard this morning we have had a few more. We believe we are down to five or six farmers.

38. Finally, you say in 10.6, "At no time did Advanta Inc have any reasonable grounds to suspect that accidental contamination of its hybrid crops might have occurred." It clearly did happen. Do we draw from this basically that since there are no reasonable grounds in that circumstance, as Greenpeace and Friends of the Earth have said, once seeds are released into the environment, we will never have non-GM crops again?

(*Dr Buckeridge*) It depends on what you are talking about in terms of definition. As I said earlier, we know from a seed purity point of view that 100 per cent purity is not possible. I do not believe that GM impurities will behave any differently to other impurities. After all, what they are is other varieties, and there are impurities of non-GM varieties which get into crops as well. Our view is that it is not right to classify a crop as GM because it has a trace level of impurity. I think the Greenpeace and Friends of the Earth view would be that it is a GM crop even when it has one part per billion in it. Our sense is that a GM crop is a crop which is specifically grown and 100 per cent or 95 per cent of the seeds in the field are GM.

39. So you would accept it is not realistic to think that there will ever be crops without a trace of GM in them?

(*Dr Buckeridge*) I think if there are crops where there is already GM incorporated into some of the germ plasm, it is not realistic to expect non-GM crops to be 100 per cent pure with respect to GM impurities.

Mr Todd

40. If I turn to your statement about your 1999 crop, you make a statement bearing in mind what you have just said that needs to be explored a little further. "A a result, there is no GM impurity in the 1999 harvest of spring oilseed rape seed delivered to Europe." What exactly does that mean?

(*Dr Buckeridge*) It means that we ran a test, we took a statistically representative sample, we used a test method in a lab that we had audited and, at the statistical level of confidence which we used, which was a high level, we found no GM impurities.

41. Could you explain that further? Does that mean that someone running a PCR test on that particular collection of seed would find no GM presence within it?

[Mr Todd *Cont*]

(*Dr Buckeridge*) It is not possible to make that statement, no. All I can say to you is that we did a thorough test. It was an issue of great importance to us.

42. Using the PCR?

(*Dr Buckeridge*) We used a bio-assay test in that particular instance, because we were not confident of the reliability of PCR.

43. Although you have accepted PCR in the context of this case, because that was how the original occurrence was identified.

(*Dr Buckeridge*) Yes, but bear in mind that what we did when we heard the original occurrence was quantified by PCR was that we first of all did a follow-up test, and we also verified using a different method. Practically, as we have said in the submission, the industry is going to have to accept that a variant of PCR testing will be the method that has to be used. The reasons for that are logistical reasons. To turn seed around between seasons is a very tight turnaround, and we will need a test that can deliver a result very quickly. It does not take away the reservations we have about the reliability of the test and the reservations that independent scientists and publications that have come through people like MAFF have about the reliability of the test. There are definite flaws in the methodology. It is not to say that the methodology in five years' time will not overcome those flaws, but right now, as we sit here, particularly looking at brassica crops, there are questions around that methodology.

44. There is another implication of that statement, which is that, even taking the qualifications you have now put into that about what no GM impurity actually means, it does indicate that the company took risks with the 1998 crop which it chose not to take with the 1999 crop. In other words, it understood the possibility of contamination. As you said earlier in the paragraph, on the basis of precaution rather than any suspicion of possible contamination, you moved your supply within the North American continent to different locations. That does imply a degree of carelessness on the part of your company.

(*Dr Buckeridge*) No, it does not. As I said earlier, the environment in the prairies of Canada for producing seed with respect to GM impurities was very different in 1998 compared to 1999. In 1999 55 per cent of the Canadian crop was GM. The land had been subjected to GM crops for a further year. In our opinion, it was not possible to get the level of seed purity protection in 1999 that we could achieve in—

45. Surely that is a matter of modest degree rather than principle.

(*Dr Buckeridge*) No, I do not agree.

46. In your figures in 1998 the level of GM crops was 35 per cent, so the move from 35 to 55 which triggered your decision to move. So it is a matter of degree, is it not, as to what degree of risk you were prepared to take with your customers?

(*Dr Buckeridge*) I think a 60 per cent increase in the acreage is quite significant.

47. Yes, but 35 per cent available acreage anywhere was quite significant. Your risk analysis would appear to be not as robust as one might wish from a company seeking to sell to customers on a confident basis.

(*Dr Buckeridge*) As I say, we made a risk assessment in 1998 in the context of the environment that was there in front of us.

48. You made a different one in 1999 on the basis of some increase.

(*Dr Buckeridge*) On the basis of some increase and on the basis that the fields that were available to us were far more likely to have already grown GM crops, so there was also a risk in those fields.

49. My own question at this point is that this evidence, not surprisingly, focuses largely on UK reaction, although as we may explore with the Minister, the reaction of Sweden comes into this as well. You presumably sold your seed widely in other parts of Europe, including in Germany, where the problem was detected. We are not party in this evidence to what reaction there has been in other parts of your marketplace.

(*Dr Buckeridge*) I would be happy to expand if that is of interest.

50. I would be interested to know.

(*Dr Buckeridge*) When we first learned about the problem in Germany, as I said earlier, we checked through seed lots to find out whether those specific seed lots of that particular variety had been distributed elsewhere. We then did a further check of seed lots when we were suspicious but without evidence that a couple of other varieties could have also been affected. That led us to understand that the seed had been sold, as we knew, in Germany, in the UK, and then there were small acreages in France. We were also concerned about acreages in Sweden and Finland. We checked what had happened to that seed, and in the case of Sweden it was reported to us that no seed had left the distributors' warehouse. This was, I think, to do with the more northerly latitude and the later planting dates. So immediately that seed was stopped. Later on the distributor came back to us and said that they had found some seed from the 1998 production in merchants' warehouses, and that that seed had gone into the ground, but it was a small quantity; that they had immediately notified the Swedish authorities of that event, and that information was received by us on 15 or 16 May. That information was immediately communicated to the UK government so that they were aware of the Swedish situation. We had told them earlier about seed in France and seed in Germany, but we had done the check on Sweden and got a negative response from our distributor. When the distributor came back and said he had found some seed, we immediately informed the UK Government. The Swedish Ministry discussed the issue with the distributor in Sweden and made a public statement on, I think I am right in saying, 16 May.

51. Within 24 hours. We will touch on that with the Minister. You mentioned France, where presumably sowing had already taken place.

(*Dr Buckeridge*) Yes.

52. What has happened there?

[**Mr Todd** *Cont*]

(*Dr Buckeridge*) The French situation is that the French Government concluded that it should order the destruction of the crop. The destruction of the crop was ordered in France before—and I would have to check and send you a note on when that decision was made. The French situation is almost identical to the UK situation at this moment, in that we have agreed a compensation plan for the farmers in France, the crops have been ploughed out of the ground in France, and so the situation is very parallel.

53. The last thing is what level of purity as seed suppliers do you seek for these particular varieties in normal circumstances?

(*Mr Ruthven*) Within the existing regulations?

54. Yes.

(*Mr Ruthven*) If it were open pollinated rape, the genetic purity would be 0.3 per cent and the mechanical purity would be 2 per cent. Because of the parentage in hybrid rapes, there is a very high degree of genetic impurity permitted, and that is 10 per cent.

55. So actually the level of tolerance is very high in these particular varieties.

(*Mr Ruthven*) On these particular varieties, yes.

Mr Drew

56. Given your demand for regulation, it sounds as though you have no confidence whatsoever in the self-regulatory regime, ie drawn up by SCIMAC. Is that true to say?

(*Dr Buckeridge*) I think that SCIMAC scheme relates specifically to GM crops and the testing of GM crops or issues of environmental diversity. I think we have confidence in that scheme. We support it. There has been talk about review of the separation distances in that scheme. We think that is appropriate. Even when you have an experience like this, it is always appropriate to look at things like that. I do not think it is fair to say we do not have confidence in the scheme.

57. But surely SCIMAC must have discussed these arrangements as well. The different bodies within the trade association must have seen this as a potential problem that was bound to arise.

(*Dr Buckeridge*) The trade association certainly saw GM impurities as a potential problem and made their views on that clear through their European Association to the Commission in October 1999.

58. So what degree of regulation would you want to see?

(*Dr Buckeridge*) We would like to see a clear threshold set. We would like regulations to specify a testing method, we would like to see regulations specify a statistical analysis of the results of those tests, and we believe the seed industry should comply with that. This is an issue of great public sensitivity. I do not think it is appropriate to have that issue governed by industry self-regulation. I think it is appropriate that there are regulations.

(*Mr Ruthven*) Could I add to that? The ordinary seed regulations are well understood and are internationally standardised so that the seed can move around the world, as it does. You have heard, for instance, that we are producing seed now in New Zealand, in Montana and in eastern Canada. Other species may come from a number of different countries. The seed moves around and the regulations are very much the same in all countries. So we believe that the reason the regulation is needed is not only for the reasons Dr Buckeridge has explained, but it does need to be internationally recognised so that when the seed is received in this country or when it is sold in this country and produced locally, its certification can be relied on by the consuming farmer and the consumer in general.

59. Is it fair to say that if full product liability was in place, that is an alternative way of doing this and you would be in considerable difficulties now? It may well be that you would blame people who have polluted your crop, but is that something you would have to face up to?

(*Mr Ruthven*) I think the issues of liability are extremely difficult. The contracts between seed companies internationally have certification on a document called an orange international certificate, and a great deal of reliance can be placed upon the information in that certificate under international rules. If a similar process were adopted for GM, which would probably fit quite comfortably with that sort of regulation, it would be possible to pinpoint the question of liability in the contractual chain.

60. Would you welcome product liability?

(*Mr Ruthven*) We have product liability under the existing seed regulations, and there have from time to time been cases where seed companies have been liable for admixtures, for example, in conventional seed. So yes, I think we would welcome it, because it would make clear what the liability is. In this particular instance which the Committee is considering here, we have compensated farmers. We still do not believe we have a contractual liability to do that, and we are not quite sure under what regulations we are operating.

(*Dr Buckeridge*) But we do know we have a business to run and we do business with farmers, and if the farmers are not happy with Advanta, we do not have a business.

Dr Turner

61. If your proposed test of one per cent contamination had been accepted, would these crops have in fact been acceptable or not acceptable?

(*Dr Buckeridge*) These crops under that test would have been acceptable.

62. If these tests had never been done in Germany and no-one had ever checked, would they have been checkable and testable eventually in the oil?

(*Dr Buckeridge*) Rapeseed oil is a very pure product and DNA material is proteinaceous in content, so unless there is a purity problem with the oil, which I think is highly unlikely, you would never detect this in the oil.

63. It would not detect the difference. Would we have detected the difference in any other products?

(*Dr Buckeridge*) Other products from the plant?

64. Yes.

[Dr Turner *Cont*]

(*Dr Buckeridge*) The other part of the plant would be the meal, which is used in animal feed. It is difficult to know whether you would have detected it in the meal or not, because we would not have tested it, but in theory, if you had done a sensible test, you might have found an amount of less than one per cent in the meal. Our advice all along from Government has been that the level of impurity and the nature of the impurity pose no threat to health or the environment. That was advice under which we acted very strongly throughout this event.

65. I wondered if it would be reasonable to ask you to back up some assertions you make, possibly in writing, after this discussion because you do make some fairly serious claims where you say that people were setting out to distort the facts. I am not sure who the "many people" outside government in paragraph 4.3 are. You are implying a malevolence in the media. Pressure groups are particularly mentioned. I would be quite grateful if you could provide us with some evidence.

(*Dr Buckeridge*) On 4.3?

66. And 4.2. Would it be reasonable to ask if you could provide us some examples where you believe there was deliberate distortion of the facts? There is a clear implication here that quite a lot of people, presumably journalists and others, have been trying to misinform the public. I would like that evidence.

(*Dr Buckeridge*) I do not think there is any assertion that journalists are deliberately misinforming the public or government is misinforming the public in that paragraph. I am happy to provide some written responses on that.

67. You believe, in paragraph 4.1 where you are talking about misinterpretation, it is pure ignorance in terms of the media?

(*Dr Buckeridge*) It is a highly technical subject and it is very open to misinterpretation of what has gone on when the story is moving very fast and the technical facts are complicated. I think it is somewhat inevitable. We were making an observation that that had occurred in this case.

Chairman: Thank you very much indeed. I hope you found a hearing before such a bucolic assembly not too disagreeable. If there is anything you would like to say which you have not, please do not hesitate to get that material to us. Anything you have said you regret, it is hard luck. If you want to listen behind to what happens next, you are very welcome to do so. I am very sorry everybody is so crowded in this room, but we cannot do a great deal about that. Thank you very much indeed for appearing before us.

Memorandum submitted by the Ministry of Agriculture, Fisheries and Food and the Department of the Environment, Transport and The Regions (G 11)

EVENTS LEADING UP TO 17 MAY ANNOUNCEMENT

1. The possibility that some conventional oilseed rape seed containing genetically modified seed might have been sold and sown in the UK was first notified to Government officials by Advanta on 17 April, following Advanta's request to DETR and MAFF officials for a meeting. The record of that meeting has been published and is attached at Annex A (not printed). In summary, the information provided by Advanta at that meeting was that:

(i) conventional seed of a hybrid oilseed rape variety (Hyola) imported into Germany from Canada had been found by a German state authority to contain GM seed;

(ii) it was possible but not certain that seed imported into the UK also contained GM material;

(iii) early indications were that the GM material was present at low levels, possibly 0.1 per cent;

(iv) it was not yet known which Hyola line or lines were affected, nor in which year(s) affected seed had been produced (possibly 1998 and/or 1999);

(v) the type of genetic modification or modifications in question had not been confirmed but were believed by Advanta most likely to be a modification conferring tolerance to the herbicide glufosinate-ammonium or possibly the herbicide glyphosate;

(vi) Advanta had ceased supplying further seed of the varieties concerned;

(vii) in Advanta's opinion, most of the seed of the variety concerned already supplied in the UK in 2000 would already have been sown.

Advanta undertook to provide more information as soon as this was available from their investigations and tests in Canada.

2. As the department with lead responsibility for releases of GM into the environment DETR officials informed Mr Meacher of the position on 18 April by means of a written submission. MAFF officials briefed Baroness Hayman orally the same day and by copy of a written note on 19 April. Officials in the Cabinet Office and Food Standards Agency (FSA) were informed on 18 April. Dr Mowlam, as Chair of the relevant Cabinet Committee, was informed on 19 April.

3. Officials proposed, and Ministers agreed, that officials should seek further information, and legal and technical advice on the possible position, before advising Ministers on what action might be necessary.

4. Further information was supplied by Advanta to DETR by telephone as follows:

(i) 19 April: tests in Canada suggested that only seed produced in 1998 was affected; the most probable cause of the GM presence was cross-pollination in the field; and as a consequence, plants resulting from the seed were likely to be effectively male sterile.

(ii) 25 April: tests in Canada confirmed that only the Hyola seed produced in 1998 was affected. The level of GM presence in the seed was just below one per cent. One GM line accounted for the majority of the GM presence. This was identified as a GM oilseed rape line that is tolerant to glyphosate herbicides (RT73) with a possible trace presence from another GM oilseed rape line tolerant to glufosinate ammonium herbicides (Liberty).

5. Between 18 April and 9 May, as more relevant information was supplied by Advanta, officials:

(i) sought legal advice on the issues raised by the supply and sowing of the affected rapeseed, in particular whether any offence might have been committed under the relevant legislation on release of GMs;

(ii) sought the information necessary to enable a thorough consideration of the implications of the incident for the environment and human health. Detailed information on the RT73 line was obtained, and the case prepared for scrutiny by the Advisory Committee on Releases to the Environment (ACRE);

(iii) considered what measures were necessary to provide suitable safeguards if another such incident occurred in future and to avoid such incidents in the future.

6. On the basis of Advanta's initial suggestion, subsequently confirmed, that oil from the GM line implicated had already been approved for food use within the EU, and considered by the Advisory Committee on Novel Foods and Processes in 1995, the FSA advised on 18 April that the oil was as safe for food use as that obtained from conventional crops (Annex B [not printed]). ACRE requested comments from the Advisory Committee on Animal Feedingstuffs (ACAF) on 11 May. In the light of the information then available, the FSA consulted ACAF on 12 May. ACAF's interim advice was received on 26 May. By 6 July ACAF had considered a full technical dossier on the RT73 line and confirmed that its presence, at the levels reported, did not pose a risk to humans or animals via use in animal feed (Annex C [not printed]).

7. It took until 10 May to obtain and analyse detailed information on RT73 which ACRE could use to give considered advice. ACRE was formally consulted through correspondence with the DETR on 10 May (the information provided to them at this stage is at Annex D [not printed]. This is normal procedure for seeking their views on issues outside their normal meeting schedule. Their advice was clear on 17 May, prior to the Government's announcement, and ratified at their meeting on 25 May (copy at Annex E [not printed]). ACRE's advice was that risks to human health and the environment posed by the presence of GM seed are very low. ACRE stated that there is no evidence from previous trials or related research studies that herbicide tolerant GM rape is any more persistent, invasive or otherwise environmentally damaging than conventional oilseed rape in similar circumstances.

8. In the light of the information then available, DETR officials in consultation with MAFF officials submitted advice to Mr Meacher on 8 May. This summarised the available information, indicated that this was not considered to be a safety issue, provided a summary of preliminary legal advice, and suggested a number of options for action which might be pursued.

9. In view of the fact that the developing package of measures concerned seed purity issues, it was agreed on 9 May that MAFF Ministers would make an announcement on this incident. On 12 May, Baroness Hayman wrote to MISC6 colleagues to clear the terms of an announcement, including measures to safeguard against the possibility of a further such incident occurring. Ministers agreed this course of action on 15 May.

10. Officials in the Scottish Executive were briefed on 5 May. The devolved administrations were formally notified of the position and the proposed announcement on 15 May. Ministers have apologised to the devolved administrations for the delay in notifying and consulting them.

11. The announcement was made on 17 May (copy at Annex F [not printed]. The Minister of Agriculture made a further statement on 18 May (copy at Annex G [not printed].

Developments Since 18 May

Options for affected farmers

12. At the time of the announcement on 18 May, the implications of the incident for farmers who had sown the affected seed remained unclear. Further legal advice was received on 24 May on whether, in the light of the advice from the FSA and ACRE, the powers available to Ministers to require the destruction of crops containing a GM for which no release consent had been given could be exercised in this instance. This indicated that there were no grounds to exercise these powers because no danger to public health of the environment has been identified.

13. This legal advice also confirmed that, as the GM concerned is not authorised for commercial marketing in the EU, farmers could not sell the affected crops once harvested. Whilst the Government took, and continues to take, the view that any losses incurred by farmers as a result of the inadvertent sowing of GM seed is a matter to be resolved between the farmer and the supplier of the seed, Ministers nonetheless considered that it was important to offer farmers guidance, and as much flexibility as possible, for dealing with the situation. Two derogations from the normal rules of the EU Arable Area Payments Scheme were therefore negotiated:

(i) (as announced on 26 May) at the EU Cereals Management Committee meting on 25 May the deadline for sowing a crop on which crop subsidy payment could be claimed was extended to 15 June, offering farmers in a position to do so the option to destroy the affected crop and plant another whilst retaining eligibility for area payments and set-aside;

(ii) (as announced on 8 June) at the EU Cereals Management Committee meeting on 8 June the requirement to maintain a crop until 30 June was relaxed for crops grown from the affected seed, enabling farmers to destroy the crop, without replanting and retain eligibility for area payments and set-aside.

14. The Government welcomed both Advanta's initial announcement of their intention to make compensation available to farmers who have incurred losses as a result of this incident and the compensation arrangements subsequently announced by Advanta.

Monitoring and enforcement of the prohibition on marketing the affected crops

15. Enforcement action in respect of the prohibition on marketing the affected crops is being taken, including:

(i) warning all farmers who may have sown the affected seed in writing that they may not market affected crops;

(ii) an audit by the Central Science Laboratory (CSL), who carry out the Government's GMO inspection functions in this area, of Advanta's arrangements for tracing and checking farmers claiming compensation;

(iii) further checks by CSL, in co-operation with the buyers and processors of oilseeds, that affected crops are not being marketed.

Investigations in Canada

16. A MAFF official visited Canada on 26 May to undertake a preliminary study of the situation in Canada in respect of the affected seed stocks. Investigations are being carried out by the Canadian authorities and MAFF is continuing to liaise closely with them.

Measures on seed purity

17. A series of measures relating to seed purity were announced on 17 May:

— a MAFF study into seed sourcing and the possibility that GM presence may occur. This study has been completed and was published on 8 June. It can be found on the MAFF website (www.maff.gov.uk).

— An enforcement regime has been introduced by DETR on seed imports as part of its GMO inspection and enforcement functions. The CSL has been commissioned to establish a mechanism for the inspection of seed importers to audit their procedures to ensure that imported seed does not contain GM seed. Seed samples will be taken and analysed to confirm that the procedures in place work effectively. CSL undertook an inspection of a site in Cambridge where the Hyola seed had been grown on 7 July. The Hyola oilseed rape had been destroyed with herbicides, but CSL checked the site for survivors and took seed samples for analysis. A more substantial protocol for the inspection regime for seed imports is being prepared. DETR officials wrote to grain and seed importers on 5 July to remind them of their statutory responsibilities under the European Directive 90/220/EEC and to inform them of the inspection regime being established by CSL to ensure compliance with the legislation.

— development of an industry wide code of practice. MAFF and DETR officials have held further discussions with the UK seeds sector. The industry is providing guidance to its members and will keep them updated on developments.

— international measures on the presence of GM in non GM seed. Discussions are underway within the EU and the OECD on seed purity standards for non GM seed, including on interim measures to apply within the EU until agreement on appropriate legislation is reached.

14 July 2000

Examination of Witnesses

BARONESS HAYMAN, a Member of the House of Lords, attending by leave of that House, Minister of State, and MS SARAH HENDRY, Head of GM Coordination Unit, MAFF; THE RT HON MICHAEL MEACHER, a Member of the House, Minister for the Environment, and DR LINDA SMITH, Head of Biotechnology Safety Unit, DETR, examined.

Chairman

68. Welcome for yet another performance before us. You are becoming a duo which almost ranks with some of the more famous television duos.

(*Baroness Hayman*) I have never been with him before.

69. I am talking about MAFF and DETR. We look forward to the chemistry between this particular set in relation to the chemistry between any previous set. You know we did our general report into some aspects of GM. Since then, we have obviously had the incidence of the problem with rapeseed. Mr Meacher has made comments about the impossibility of having an absolutely pure product. We have had very recently, in the last few days, the trashing of the field in the south west. Events have moved on and we want to get up to date, which is the reason for this hearing. We have just had an hour with Advanta and I think it is fair to say that the main thrust of what they said was, "We all know there is a problem here. We have got to have some sort of regulation which lays down a tolerance for even accidental levels of contamination, for want of a better word, in GM free crops. We, at Advanta, have been asking for regulations; we have asked Brussels for regulations; we have asked MAFF for regulations. We are now a couple of weeks from one crop being lifted and another one going into the ground and nothing is happening." Can you tell us what is happening?

(*Baroness Hayman*) Perhaps I could talk about the European action. As you know, this particular event regarding oilseed rape was not an exclusively United Kingdom event. It happened in Germany, France and Sweden as well. One of the first things that we did was to try and put this onto the agenda within Europe because it is obviously an issue where there is European legislation and regulation and equally where we need to negotiate with the rest of the world where the majority of GM production takes place, so there have to be OECD considerations as well. There have been several meetings of the Standing Committee on Seeds since then. That Committee has now come up with interim proposals about a framework that would be voluntarily adopted throughout the Community, which would include exchange of information between Member States, which I think is very important, which would set some initial tolerances for GM constructs that had Part C marketing consents—and that is the only proposal—but would set a zero limit for anything that did not have a Part C consent. Those proposals are out for consultation between Member States at the moment with a view to publication, I understand, next week. David Byrne is coming to this country on Thursday and wants to meet MAFF ministers to discuss that. I hope to be able to do so then. I hope that we might have an interim framework in place for this year's planting season, but obviously we do need comprehensive legislation. That will have to be quite complex. We found this when we were setting tolerances around food. The tolerance levels in food for something not needing to be labelled as GM may well need to be different to tolerances for seeds. It may well be different for something that is labelled GM free, rather than something that has to be labelled as GM. That is another parallel issue. I think there is work going on and there is certainly work that was foreshadowed in the European White Paper on Food Safety, which did mention work that the Commission needed to do in this area.

70. I am struck by the contrast in public reception to all the announcements relating to the genome on one side and the whole GM issue on the other. Do you get a sense that, unless a mechanism can be put in place whereby people feel they own, to use an old fashioned phrase which is consensually based, but this whole thing is spinning so out of control that it is going to be very difficult to find a method of making it possible for GM crops to be grown in the United Kingdom or to tackle the sort of issue which we have identified with the Advanta incident.

(*Baroness Hayman*) My personal view is that there is a dichotomy in public opinion between the potential benefits that are seen in what is happening in the human genome project and the applicability to human health and indeed to animal health, and that which is seen in relationship to crops and food. Genetics is a branch of science like anything else. In my own view, it is neutral. It is neither good nor bad, any more than chemistry or physics, and it can be applied productively or for results that are unsatisfactory and unwanted. I also think that there have not been things that have come out of crop production in Europe that have been attractive to Europeans to make them want to support this particular technology as against taking a very precautionary approach. When you look at potential applications, not of herbicide tolerant maize or oilseed rape, but at vitamin A enriched rice, at crops that could grow in areas that in the past have been contaminated with saline, then you see the potential applications for agriculture.

71. Advanta told us that it appeared that the contamination came from the presence of GM crops but at a distance of over four kilometres, because they were applying separation distances of four

[Chairman *Cont*]
kilometres, which was eight times the requirement or rule in Canada. I know that the government's response to this particular problem was to say, "The obvious first thing we have to look at is always the separation distances." Have you yet drawn any conclusions about this?

(*Baroness Hayman*) We launched the review and asked for opinions on separation distances. Submissions have been concluded. We have not yet drawn conclusions from it. Nor has it received evidence from the Canadian authorities about the experience within Canada. They are still undertaking investigations, so we do not have conclusions from the Canadian authorities about the genesis of this particular event.

72. You accept—I am looking at Mr Meacher now in relation to the comment he made in the House some time ago—that even when all this is done and dusted you will have to accept the possibility that, in seeds designated as GM free, there may be some element of pollution for the reasons which have been outlined?

(*Mr Meacher*) Yes. That is perfectly clear. There is in the messy world of agriculture no absolute dividing line. In an absolute, extreme case, for those people who would like the whole of the United Kingdom to be GM free, it is not impossible—

73. Like the Falkland Islands?

(*Mr Meacher*) It is not impossible that seed in very unusual conditions could be blown across from the continent. There is no absolute dividing line. We have to have a sensible rule. I have to say—and this has been said over and over again—that these traditional isolation margins do take account of a very long period of agricultural practice. They have been tested repeatedly and something of the order of 99.5 per cent does not get beyond those traditional distances. If you extend those further, you will certainly reduce those but we are talking in some cases about vanishingly small amounts of pollution.

Mr Todd

74. Although the evidence in this particular case is that compliance with the voluntary SCIMAC rules produced an outcome which was a position of one per cent roughly contamination, these were well in excess of the separation distances that were endorsed, thus far voluntarily, in this country. It implies that those rules are really insufficient to meet the concerns that people have here for a reasonable level of assurance of purity.

(*Mr Meacher*) First of all, as Helene Hayman has said, the actual cause of the contamination is still not established. The Canadian government has still not reached a conclusive view that it was as a result of cross-pollination. The evidence, I understand, may point in that direction but it is not conclusive.

75. Certainly the evidence we heard prior to your coming in from Advanta was that that appeared to be very firmly their view.

(*Mr Meacher*) I cannot speak about the Canadian situation. No doubt we shall get a final view given to us by the Canadian government. Yes, of course we do have to take that into account and that, amongst other evidence, is precisely the reason why we are undertaking this review, which will report by 1 August. We will have to take account of it with regard to the autumn plantings where we can, although we may be only able, if any changes are to be made, to make provisional changes at this stage.

76. Can I ask you what the strategy behind this review is? What are we seeking to achieve?

(*Mr Meacher*) We have a joint answer. Would you wish to give it?

(*Baroness Hayman*) What I would like to achieve is a testing of the basis on which separation distances have been laid down for the farm scale evaluations in the past, where the Advisory Committee on Releases into the Environment has recognised always the possibility of pollen flow, for example, and has assessed that for environmental risk before approving the trials. Obviously, what those assessments have been has to be tested against whether there is any new evidence that people want to put forward about cross-pollination. Equally, we have to look at the issues about seed production. There are all sorts of other elements of pollen transfer. It could be cross-pollination with wild plants or whatever. What I would like to get out of the review is a sense of the separation distances that are necessary for different levels of purity because the separation distance is not something in itself; it is a means for achieving purity standards. It does become important therefore that we have some decisions about what purity standards are. For me, the major lesson that came out of this was that the purity standards that we had for "contamination" by conventional seed that was not the seed that was being marketed—another variety of Hyola oilseed rape, for example—were very broad, set down over many years. We have production levels, systems that allow that to happen, but they do not take specific account of GM and people want a lower tolerance level—this is my instinct—for GM adventitious presence than they do for non-GM adventitious presence, but we have to consider that and how you put that into the framework. That was one of the difficulties of dealing with this particular incident.

(*Mr Meacher*) There is a functional relationship between distance and degree of purity or impurity. I think I have already said this publicly: my view is that that could only be determined by what consumers are prepared to accept. Once we have a clear idea of what degree of contamination they are prepared to accept in a product and still call it non-GM, then one can work backwards to the distances that will actually produce that result.

77. I prefer the latter answer, if I may, which starts from the point of view of who the stake holders in this particular review are. If we are to persuade people in this country of the acceptance of any level of this technology, we have to start from their perceptions rather than from the supply chain's perceptions, the farmers' perceptions, the scientists' perceptions and so on. I am reassured to some extent by what Michael has said. Can I ask what the role of the AEBC will be, which has the challenging task of encompassing a wide variety of views on this subject? What role will they have in this strategy?

(*Mr Meacher*) That was set up as a body precisely to deal with this kind of situation.

[**Mr Todd** *Cont*]

78. That is why I asked the question.

(*Mr Meacher*) We have not, I think everyone would agree, had a very balanced or very comprehensive debate about what is a very complex and difficult subject. We wanted a body which first of all would draw in the whole range of the stakeholders, whose authority and competence would be respected by the public and who could seek to lead that public debate in a better manner on precisely this sort of issue. This is the kind of issue that we would refer to them; they would take soundings and hopefully they would produce their opinion. They would publish it and that would spark a more balanced debate. That is exactly what we wanted them for.

79. Do you expect therefore that this body should have the opportunity to pronounce on this matter before you actually publish the proposals on separation distances as a government?

(*Mr Meacher*) It would be very desirable to do so but I take it the point of your question is that will not be before 1 August, and I think that is perfectly true. We are under conflicting pressures here. We have the winter rape plantings which have to take place before the end of August and we are being pressed to reach conclusions which could be applied to these plantings; and at the same time I agree with you, having set up a body for that purpose, it would be much better if we were, at a more leisurely pace, able to consult them and for them to undertake their consultations, but in the short term pressures that we are under that, on this occasion, will not be possible, although I am sure that we are going to look to them still to comment.

(*Baroness Hayman*) AEBC was set up not because there was a feeling that the regulatory bodies dealing with the technicalities of these issues, like ACRE, were incapable of so doing. I would not imagine that AEBC would be looking at specific differential distances for separation between different sorts of crops. They were to look at some of the broader issues that you were talking about around public acceptability, ethics of involving the technology and—

80. There is a clear relationship between those two issues.

(*Baroness Hayman*) Of course there is. By implication, you were suggesting before that I was not focusing on consumer acceptability in terms of this issue. I am as committed as anyone else to giving people choice and information about what is going on, but I think it is important that we do not neglect the international framework in which we are working. The directives about GM products within Europe are designed to safeguard public health and the environment. Without evidence of harm to those things, we cannot ban people from, for example, lawfully marketing a product that has been approved through the regulatory processes as a novel food. People should be allowed absolutely to choose whether they buy it or not, but it would be wrong of government to mislead people into suggesting there are powers without evidence of harm to take legal action. An illustration of this was in this particular incident, where our clear understanding was that the government did not have powers to order the destruction of this crop because there was no advice of any risk to human health or the environment. What I am trying to do is be honest about the international framework of regulation with which we are dealing here.

81. In which the public at large appears to have little confidence at present, and that is why one comes back to the issue of how to engage the other stake holders in this issue of safety and science and so on, which you have rightly addressed, but to provide a framework in which there is some degree of consensus.

(*Baroness Hayman*) Absolutely, and I think we need to do that at a European level and at a world level, but there are different attitudes. There are different attitudes in the United States, for example, and different attitudes in China than there are in the United Kingdom or Europe. We have to recognise that in a world of international trade in seed as everything else.

Mr Mitchell

82. I wanted to ask about MAFF's role. Advanta warned both departments on 17 April what had happened but there was not a statement from MAFF and Mr Brown until 18 May. Why did it take so long?

(*Mr Meacher*) Do you want me to start?

Mr Mitchell: You are not answering for Mr Brown, are you?

Mr Jack

83. Who is going to spill the beans?

(*Baroness Hayman*) There are no beans to spill. Advanta indeed went to a meeting at DETR, where both DETR and MAFF officials were present. We have been through this and it is on the record from the debate on 8 June. From our memorandum, you will see that the factual situation about what was affected, how much seed was affected, which years were affected, was not at that point clear. The factual situation was not clear.

Mr Mitchell

84. Not fully clear but it was pretty clear.

(*Mr Meacher*) In one case, Advanta originally thought the GM line was glufosinate-ammonium. In practice, that turned out to be incorrect. There may be trace elements but it is in fact herbicide glyphosate. At that stage, even the first factual signs were—

85. The basic problem was absolutely clear and yet you dithered around until 17 May. Why?

(*Baroness Hayman*) It did not feel like dithering. It felt like establishing the facts, establishing whether there was a risk to either public health or the environment. The initial response was that there was not, that that was not the formal advice of either ACRE or the FSA at that point. Equally, the legal framework in which we were operating was not clear. It was still not completely clear to me when I answered the question which was also answered in the Commons. Establishing exactly what the legal framework was took time. As soon as we were in a position to be clearer about what the position was,

[Mr Mitchell *Cont*]
what the position about any potential risk was and some of the legal issues started to emerge, as soon as too we saw what needed to be addressed in terms of the regulatory framework in which this had arisen, we went public on that. I now wish we had gone public earlier, not because I do not think it was right to do that initial response, but because the delay and the process became in itself an issue.

86. Advanta say—and the industry presumably backs it—that the industry had warned about these issues for some time; they had not been addressed by the regulatory authorities and a regulatory framework would have at best prevented this incident. What they mean by that is setting minimum thresholds for GM impurity, standard testing methods and method of analysis. They have been asking for this for some time; the government has done nothing. All of a sudden, it panics.

(*Baroness Hayman*) I have no record whatsoever of the seeds industry asking for a specific—

87. They are not telling the truth?

(*Baroness Hayman*) I am telling you. I am choosing my words carefully. I have no record of the seeds industry approaching the United Kingdom government about issues of setting thresholds. I know that there has been work done within Europe and that came out in the Food Safety White Paper. The issues on GM seeds that I was addressing within MAFF were around national listing, which was a major issue and how we dealt with GM varieties that came through the national listing, and the issue about labelling requirements for imported GM seeds. There were two European directives. We were out to consultation on implementation. Those were the issues that had been, if you like, on the top of my seeds GM agenda. I obviously now wish that tolerances had been there but there are lots of areas in which we have to deal with GM issues. I am still conscious, although I do not now hold responsibility for it, about the issues of GM in animal feed.

88. The Government's position on GM is shifting. I always form my attitudes from the faxes that come to me every morning and initially, for a year or so, these were, "GM, marvellous technological achievement for Britain. Great British advance." All of a sudden, because of a public row, the faxes are now, "GM, terrible. Frankenstein foods. Monstrous stuff. Great danger." Effectively the Department panicked. You made a distinction earlier between contamination of seeds by other conventional seeds and contamination by GM, which you regard as more serious. You regard that as more serious because of the public panic. The Department must have known for a long time that contamination of conventional seeds was entirely possible and indeed that most conventional crops would contain some GM material.

(*Baroness Hayman*) I did not know that and I do not know today that most conventional seeds contain GM material. We did a trawl which was published, which was announced in my answer, about countries that export seed to this country, where there is GM production of seeds alongside conventional seeds in order to be able to look at the areas in which this potentially could be a problem. I do not think you can extrapolate from that the specifics. Of course, with 20/20 hindsight, one perhaps should have been addressing this issue earlier on. I do not think it could be addressed at United Kingdom level because it is a European issue. I do not think you can say one was panicked into it. Why do I say it is different from contamination by conventional seed? It is different from it because the directive says that any deliberate release into the environment is a contravention of the directive. That is why it is different. I do not think I have said in my opening remarks that I was in a panic over Frankenstein foods.

89. No; I said that, but it is different because there is this public panic. That is the basic reason why it is different. That is also why it is important in this country, as well as on a European dimension. Had MAFF received warnings or had the DETR received warnings that conventional seed could contain GM?

(*Baroness Hayman*) There was a report published last year which was published by MAFF from the John Innes Centre, which dealt basically with organic farming and GM. I understand, because it was mentioned when this whole event happened, that it contained a section dealing with the potential for there being GM content in conventional seed and I understand that that was the genesis of the work that was put in place by DETR in order to have a testing regime in their contract with CSL.

90. You knew in advance that it was quite possible?

(*Baroness Hayman*) Collective or personal? You can blame me for it. I personally had not focused on the issue of traces of GM seed in conventional seed. Corporately, yes, there had been a report. It had been published by MAFF and action had been taken, because responsibility on monitoring for GMs in the environment is the DETR's, by DETR to follow up on that.

91. This involves the Baroness personally in the sense that Advanta tell us that to devise a scheme to segregate crops and harvest them for export would have been difficult, but they devised this scheme. They tried to meet with MAFF to discuss this but had no success. A meeting with Baroness Hayman was cancelled by MAFF on 23 May. They put their ideas in writing and faxed them to MAFF that day. Those ideas were still under active consideration, according to the Baroness, on 25 May when she met industry representatives, but not Advanta. Therefore, Mr Brown's announcement on 27 May that he preferred a plough-in came as a complete surprise. How did that mess arise?

(*Baroness Hayman*) The meeting that Advanta had asked for with me I did not hold for two reasons. One was that I was continuing to try and clarify the legal position, both in regard to whether any regulatory action was appropriate, and in regard to what the potential legal position about marketing at any stage in the supply chain might be. It therefore did not seem appropriate to meet at that time. When they faxed their proposals through, I asked a senior official at MAFF to contact them, as he did, to say that we would look at the viability of those proposals and discuss them at a later date. We were getting legal advice on the intricacies of this situation, if not

[**Mr Mitchell** *Cont*]
hourly, certainly during the course of the day and it was an evolving situation. You asked me something else.

Mr Jack

92. Can you clarify one thing arising out of what Mr Mitchell was saying about the requests which the industry had made with reference to establishing standards? In paragraph 3.2 of Advanta's evidence to us, they say, "Seed industry groups have long pressed Government and the European Commission to establish such regulations." These were regulations dealing with exactly the circumstances of the GM content of conventional seed batches. You indicated in your evidence that you were unaware that such requests had been made. Who is right?

(*Baroness Hayman*) I am honest in saying that I am unaware that such requests had been made by the seed industry to the United Kingdom government. I know that there had been discussions at a European level by the European seeds industry with the Commission on these issues. I did ask within the Department whether there was any knowledge of such approaches and I was told not.

93. Advanta have put it in writing and I think it would be helpful if the record could be re-examined to see how early such pressure was applied.

(*Baroness Hayman*) Would it be helpful if I undertook to trawl through records and write to the Committee on that?

Mr Jack: Yes. Thank you.

Mr Todd

94. Turning again to Advanta's evidence and the calendar of events they supplied, the period leading up to the eventual announcement publicly by MAFF, the previous two days' record indicates that on the 15th Advanta's distributor in Sweden discovered some contaminated seed had been sown there. The distributor informs the Swedish government and then Advanta UK. Advanta UK informs MAFF. The Swedish government then acts with peremptory speed on the matter and makes a public announcement within 24 hours. One might contrast this to the one month's consideration and thought given within the United Kingdom on the same matter. We note that on the following day, perhaps a cruel person might consider prompted by the Swedes' breaking cover on this one, MAFF finally produces a public pronouncement which says what is going on. Would that be a cruel and totally inaccurate interpretation of events?

(*Baroness Hayman*) Yes.

95. Would you like to clarify the linkage between what was happening in Sweden and what was happening here?

(*Baroness Hayman*) Absolutely. If you look at that same piece of paper, you will see that on 9 May Advanta admit that they were advised that lead responsibility was with MAFF and that a press statement would be necessary. I can also say, from our own memorandum, that from when I had taken lead responsibility in this I had written out to colleagues in the appropriate Cabinet sub-committee on 12 May, saying that we needed to be open and I wanted to make a press statement about this. That was before I had any idea that there was any seed in Sweden. I only knew that there was seed in France and Germany, neither of which authorities had gone public on the issue.

96. We merely draw the conclusion that, instead of the contrast being 24 hours and one month, the machinations of the Swedish governmental system perhaps move at a pace of 24 hours as opposed to eight days?

(*Baroness Hayman*) No. Their legislation is different. Their environmental code has clear rules about these issues.

97. They are EU members as well as us?

(*Baroness Hayman*) Yes, but it is possible to gold plate EU legislation, as we all know. I am not criticising what the Swedes did. The Swedes decided to go public first and then do the investigation and try and find out the situation that was going on. We chose to try and find out and to be able to answer some of the questions first. Both are legitimate ways forward. Obviously, we are being criticised for doing that. There are judgments to be made and people make their own judgments about the course of this. The one thing I would like to get on to the record is that it was not, as you suggested cruelly, any issue about knowing that this was happening in Sweden and going to become public. The decision to go into the public arena on this had been taken before then.

Mr Öpik

98. Turning back to the Advanta submission, it says in paragraph 3.4, ". . . Advanta UK urged the Minister of Agriculture to take action on threshold regulations when it was finally granted a meeting with him on June 1st. It is lamentable, with harvest of Winter Oilseed rape only days away, and planting of the new crop starting at the beginning of August, that regulatory guidance is still non-existent." Leaving aside the rather strong description of Advanta's view of government action, do you intend to offer guidance before the plantings in August?

(*Baroness Hayman*) This relates back to my earlier answer about the EU interim agreement which I hope will be there and in place before the planting season. That will be stronger for being an EU-wide initiative and we hope to have it finalised within a matter of days.

99. What assessment have you made of the implications of this development in terms of field trials?

(*Mr Meacher*) On field scale trials, which is a DETR lead, what we have been discussing very largely this morning are the seeds regulations and thresholds of purity. The implications for the field scale trials are the point at which the Chairman started off, which was the isolation distances. We will be looking to get a conclusive view from Canada about the cause of contamination. It is possible that there never will be such, but we will have to take account of that and that hopefully will be included within the MAFF review. Clearly, the MAFF review is the central issue which is going to impinge on the trials.

[**Mr Öpik** *Cont*]

100. That is what you have to say. I cannot really argue with you on that.

(*Mr Meacher*) That is the case.

101. Exactly, and it is common sense. My father often said sense is not common. I never understood why he said that to me. On 25 May, you said on the Today programme that—I think the question was about thresholds. You said, "I would be concerned about . . .". Let me give you the background. "Would you be happy to have a threshold of one per cent GM contamination?" was the question you were asked. You said that you would be concerned about it but ultimately it was not your view as Minister that mattered; it was the view of consumers. You said, "It is not a matter for the government. It is what consumers believe is right." That seems to imply that, if there are trace elements of GM in everything, that is going to make it difficult for consumers to make a decision. With Advanta, I was asking the same question about whether there would now be a trace element of GM in pretty much everything. There was an implication that that could happen. Do you have a view on that?

(*Mr Meacher*) That would be the conclusion that I would draw—namely, if there is a trace element in everything, how are consumers going to take a view? What I meant was that there should be—and it is rather elusive—some technique or mechanism for consulting public opinion in a systematic and reliable way. The problem is exactly how to do this. As Mr Todd has raised, we did set up the AEBC precisely to have one route into that. Another are citizen panels. Another route is to take account of views from the consumers associations about the views of their members. There are other ways, by polls, of course, of trying to tap public opinion. It is my view that public opinion has not sufficiently focused on this so that a clear view comes through. I genuinely am unsure what the attitude is of the public in general—and of course there will be a range of opinions; it is not as though it is going to be homogeneous. I am not sure what a majority view, and how large that majority view, would be about the thresholds that they would accept. I still think in terms of our policy making that that is a rather serious gap. Policy continues to be driven by the industry, government having to try and be arbiter between the parties, but the industry, with its own commercial interests, being a much more powerful driver of consumer opinion. Consumer opinion tends to get expressed in a slightly florid manner through the media, but there has been no systematic, direct contact in any systematic way with public opinion and I think that is something that needs to be remedied.

102. Do you feel that applies to field trials as well?

(*Mr Meacher*) The field scale trials have been pretty extensively discussed on all current affairs programmes and in the newspapers in a reasonably balanced way. Again, there is a wide range of opinion. There are some people fanatically against it, even to the extent of trashing the crops, but my understanding is that there is a clear majority of the public who favour the trials as the only way of establishing whether or not genetic modification of crops does constitute a risk to the environment. Many scientists fear that that might be the case. The only way systematically to find out is to have scientifically reliable trials which are totally transparent—and they will be. All of the evidence on which a decision is finally reached will be made public and there will undoubtedly be a major public debate about it. I personally believe that that is needed. I am proud that the United Kingdom is leading the world in trying to get this data. We will make it available and public opinion can then be focused around a detailed case.

Chairman

103. You are confident that you have a sufficient number and scale of trials to be able to yield scientific evidence which will not immediately be disputed on the grounds that it comes from a sample which is too small?

(*Mr Meacher*) Yes. The decision about the number of fields is taken by the Scientific Steering Committee who supervise the research contractors and the work which SCIMAC has done to obtain these fields. They are not obtained by government. In the present year, we have been informed by the Scientific Steering Committee that they need a minimum of 12 fields for winter sown oilseed rape, 12 for fodder maize and 20 for beet, making a total of 44. We have 48, so we are over the minimum that is necessary.

Mr Öpik

104. I am tempted to raise the one GM field in Wales which I understand was planted next to organic farmland. That is an aside. I do not expect you to comment but it is a specific issue which it might be helpful to resolve. Probably not.

(*Mr Meacher*) I will comment if you like.

105. Go on then.

(*Mr Meacher*) This is a GM for which there is a Part C marketing consent. It can therefore be sown anywhere within the United Kingdom. The field met the requirements of the Scientific Steering Committee. It was within the distribution area for the trials. There was no reason why it should not go ahead. I understand the problem about the nearness to an organic field and that again raises my concerns about the notification process and whether we cannot find a better way of locating fields which will minimise these potential conflicts with local organic farms.

106. For the sake of brevity, maybe we had better continue this in correspondence. Can you clarify a slight difference in comment? Joyce Quin stated in the House on 17 May, "ACRE and the Food Standards Agency. . . have confirmed the view that there is no risk to public health or the environment." I think some time after that, ACRE's advice, as posted on MAFF's website, said that the risks to human health and the environment are very low. In your judgment, is that the same thing?

(*Mr Meacher*) It is not for me to put words into their mouth when they say it is very low. That is their view. I think what they refer to there are exceedingly low levels. The language is modest by comparison with the way most people would generally describe it. As is often the case in this area, you cannot actually say it is nil, but it is so small as to be utterly negligible.

[**Mr Öpik** *Cont*]

(*Baroness Hayman*) The basis on which we were working and were reassured was that the GM construct had been approved in terms of novel food use and is undetectable in the final food form. The FSA therefore had no concern about this crop going into the food chain. Therefore, the risk assessment as a food had been done. Equally, the construct had a Part B marketing consent and had been approved by ACRE for 100 per cent of that crop to be field trialled in this country. Here, we were talking about one per cent of it. That was the basis for feeling and stating that there was not a public health or an environmental risk here. We were not dealing with something that was unfamiliar.

107. It would be pedantic, in your judgment, to make a big distinction between very low and no risk?

(*Baroness Hayman*) Life is not a risk free activity, is it?

Mr Jack: I want to turn to the events of 17 May. The Minister of State in MAFF made some announcements in the House of Commons about standards, looking at seed imports. Minister, you confirmed these in a MAFF press release that went out in your own name. It has all the hallmarks of government desperately trying to be seen to be doing something against a background where there was not anything very concrete to say.

Mr Mitchell: You should know.

Mr Jack

108. Indeed. I wanted to establish exactly what was happening because the three headlines in the press release are "Pressing for concerted international action to seek new legal standards for seed purity". You talked a moment ago about there being an EU agreement but would I be right in saying that an agreement is an agreement, not a directive, not a regulation? How would it apply? How would it derive its strength to influence the events we have been discussing?

(*Baroness Hayman*) There are two proposals under discussion in the EU, partly in response to our raising these issues in response to this event. One is about an interim agreement amongst countries about a common approach. That is what I was describing earlier. The other is for putting in—and I believe the legislative vehicle would be seeds legislation rather than Directive 90/220; I think that is still up for debate—the processes that would set tolerances above which things had to be labelled as GM and testing regimes that were appropriate and could be validated across the Community. We went through this process in terms of tolerances in food. Yes, of course we have to look at what is acceptable to the public. We equally, as a regulatory body, have to look at what is enforceable, what you can measure, what you can guarantee you have labs to measure and what you can then enforce.

109. This sounds very good but Advanta made it clear to us that there was a desperate need to have a concrete piece of legislation, either at a European or indeed on a world basis, that would enable there to be a proper, objective method of adjudicating on these matters with appropriate scientific tests etc. I come back to the question I asked at the beginning. Let us assume that Member States agree something. What would be in this agreement and what legal status does it have?

(*Baroness Hayman*) As I think I made clear at the beginning, there would not be a legal base for the interim agreement. It would be a voluntary agreement. What is being proposed is a 0.5 per cent tolerance for GM adventitious contamination where the GM construct is subject to a Part C marketing consent, but a zero tolerance for all other GM constructs. Each country would undertake testing.

110. By what method?

(*Ms Hendry*) That is something the Commission Working Group is going to look at to establish what would be the most reliable mechanism in the circumstances. It has not been fixed yet.

111. You used some very interesting words there: "the most reliable method in the circumstances". What does that mean?

(*Ms Hendry*) I think it means that it would be very hard to find a methodology that gave you absolutely 100 per cent certainty without there being an element of uncertainty either side of the result.

112. Are they going to nominate—I go back to our friends in the seed industry—a range of acceptable tests and you can pick which one you want, or are they going to home in on to one?

(*Ms Hendry*) I do not know the answer to that.

(*Baroness Hayman*) That will have to be answered, if I may say so, in the formal legislation, the timetable for which is December this year. They are looking to have legislation in place, where those questions which do have to be answered will be answered. All countries have facilities for some sort of testing for DNA. The idea is to get something in place now including exchange of information, which I think is quite an important thing and would have helped in this particular episode, but it is an interim; it is not all singing, all dancing. I think it will have to be more sophisticated because we will have to look at potential for different tolerances for different seeds. We will have to have protocols for testing. We are not at the point of getting there. I do think we have made some progress since May to have something that will hopefully be there for 1 August.

113. You say you hope to have legislation in place by the end of the year. Will that be a modification to the seeds regulation that would have gone through both the Council and the Parliament, in your judgment, and be implemented by the end of the year, or is that an aspiration?

(*Baroness Hayman*) As I said, I understand that the Commission hopes to have that legislation in place. I am meeting David Byrne this week. I hope to get a better understanding of the mechanism. Equally, my understanding is it would be through the seeds directive.

114. You have given us a very clear answer on that. It says that there is hopefully going to be European interim agreement and rules by the end of the year; and yet the same press release on 17 May has mention of working with the industry on a code of practice. Is that not muddying the waters, or does this code of

[**Mr Jack** *Cont*]
practice add some value that the other things we have just discussed do not have in them and, if so, what is in it?

(*Baroness Hayman*) When that press release was announced, I had no idea what the timetable would be for European action. It seemed sensible to look at what could be done in the meantime on a United Kingdom basis. We did meet with the industry and the seeds industry has given advice to its members about testing and about the legal framework in which they are operating with regard to GMs. I actually think that has been overtaken by events and that it is more useful to have an EU code of practice, which in a sense is what the interim arrangements are, and legislation. That was best attempt at the time.

115. The third element in the press release talked about the testing of seed imports. Indeed, when this matter was discussed in the House of Commons, it became evident that the DETR were setting up a system for spot checking of seed imports for GM material. I would be interested to know whether that system was set up. When was it up and running? What tests were used? Is it going to be compatible with what we have just heard?

(*Mr Meacher*) I am sure it will be compatible with what Helene has been saying. The new inspection agency, which is the Central Science Laboratory, CSL, took up post on 1 June. What we are proposing is that they should audit work by the companies, which they should already be undertaking. The seed importers should already be keeping records to show that proper checks and controls are in place to ensure that imported seed does not contain GM. CSL will audit this paper work and where necessary they will remove samples for testing. They will, in fact, test, I understand, samples in batches of 10,000 seeds, which means that they can reach a scientific accuracy of O.1 per cent. But the important point is that we have written to seed and grain importers to remind them of what was already an existing duty, and CSL is already beginning this auditing of the paper work. When they come across paper work which gives them any grounds for suspicion, or where there is paper work which they judge to be inadequate or deficient, then they will undertake sample testing.

116. Can you refresh my memory. I asked Advanta the question as to whether they pre-tested for GM contamination before the seed left Canada and came in this direction. I hope I have the answer correctly: the answer was no, they did not think there was a need to do this because, they argued, the separation distances were their check and balance against the contamination. You are saying that people need to be reminded about what they are supposed to be doing. Can you help me there: what are they supposed to be doing?

(*Mr Meacher*) They are certainly not supposed to be importing conventional seed which contains a GM, especially which has not received a Part C marketing consent. It is their responsibility to ensure that does not happen. Whether that is testing which is done at the country of export or the country of import—

117. So just to be absolutely clear because this is quite important: there is a legal requirement for a company like Advanta not to import what you have just described, and to be able to show by some test that they have checked the import of that seed, so that effectively it complies with our requirements?

(*Mr Meacher*) Yes.

118. Right. Can you, on a point again of detail, because there is some questioning about the test, what is the test that you approve of to determine these matters?

(*Mr Meacher*) That is a technical issue. I have with me Linda Smith, who is head of the Biotechnology Safety Group in DETR. I am not sure that she can answer that but I know she will do it better than me!

(*Dr Smith*) The tests will be based on the same sorts of tests as Advanta were carrying out themselves.

119. But Advanta told us that they had not carried out any tests apart from agreeing to know what—

(*Dr Smith*) The tests to detect the presence of GM constructs in grain or seeds, so that you can determine whether there is a presence or an absence. Then you can do further tests.

120. They told us that they use this PCR test but there appears to be a bit of a scientific debate about which is the best and the right test. Which is the test that the Government approves of?

(*Dr Smith*) The Central Science Laboratory are, at present, deciding which test methodology is going to be the most appropriate. The CSL do carry out a large number of tests on GM material. They do it for food testing under the food legislation. So they have the capability and they are devising the best way to carry out this sort of testing.

121. Is all this material going to be made available to scientific peer review so that everybody knows what is going on in this obviously sensitive field of science?

(*Dr Smith*) Certainly the work the CSL do, for the contract with DETR, the information is made publicly available.

122. My final question to the Minister. He was very clear indeed—if I understood him and please correct me if I am wrong—but I got the feel that Advanta should not really have imported this seed and that checks should have been carried out to ensure that this did not occur. Have Advanta broken the law, perhaps inadvertently, by bringing this seed into the United Kingdom?

(*Mr Meacher*) If a seed importer introduces a seed into this country, which subsequently turns out to be contaminated with some GM construct, and if they then sought to market it, then because, as we have already said, there is a zero level, a zero threshold, that would be against EU law, yes.

123. So what happens now?

(*Mr Meacher*) We are looking at the full legal implications of this. That is as far as I can go.

Mr Jack: Okay.

Chairman

124. They are looking at the implications and you are looking at the implications, so the lawyers are, at least, going to have a jolly time in the next few weeks, are they not?

[**Chairman** *Cont*]

(*Baroness Hayman*) I was only going to try and follow up something about Mr Jack's line of questioning. This has illustrated an issue that we are going to have to deal with, if this is within the Seeds Directive, because conventionally seed purity and assurances about seed purity have been developed on the basis of production methods rather than spot testing—assurances about different processes in the seed production—and that has given certification for imports. Now if there is—and what there has been has given assurance as to quality and purity—but if there is to be a different standard around GM, it may well be appropriate for there to be a different regime in terms of enforcing that particular regulation. That is one of the issues that will have to be looked at in the legislation, which we are looking at, for the future.

Mr Jack

125. That is very helpful. Are you still confident, in the light of that important and potentially scientific and quite complex description you have given us, that Europe, with its labyrinthine ways of cross-consultation, will be able to resolve a fundamental change of establishing a purity question on seed by the end of the year?

(*Baroness Hayman*) I do not want to change the answer that I gave you earlier, which was my understanding that this was the intention. I do think we have to look at the interaction of legislation on deliberate release into the environment of GMOs, and the labelling requirements and the purity requirements in terms of food or seeds or anything else. One of the difficulties, as I said earlier in this, was that the deliberate release into the environment is *ipso facto* an absolute offence, but in terms of enforcement action we go back to this issue of whether you could destroy the crop. There has to be grounds in terms of risk to health and the environment. That is a difficult regulatory framework in which to operate. I do believe, at a European level, there needs to be some dovetailing of the legislation which has gone on on different planes and at different times.

Mr Drew

126. Just an observation on that. Certainly the evidence by Advanta in their memorandum, states quite categorically that on 25 April they felt the DETR had said, did give them the impression, that there had not been any offence committed. That is something which clearly there is a disagreement over.

(*Mr Meacher*) We will take issue with that statement in the Advanta evidence. This was, I understand, a phone call that Linda Smith, beside me, held with a representative of Advanta. It is probably best to ask her to respond to that.

(*Dr Smith*) When Advanta came to see me and my colleagues from MAFF on 17 April, we did not have one of our lawyers present at the meeting so we discussed at that meeting what the legal circumstances were, as best we could in that meeting. I had undertaken to go away and consult my own lawyers in order to be able to discuss the legal circumstances with Advanta. So after I had had this conversation, when I was given the information about the further tests from Canada, we then discussed the circumstances in which an offence would arise under the legislation. That is what I discussed over the telephone: what somebody would have to do in order to commit an offence under the legislation. So the legislation says that you would commit an offence if you released a genetically modified organism, that did not have a consent, and you did so knowingly. That is the circumstance of this discussion. The representative from Advanta could then slot that into understanding what they had done. There was no further conversation than that.

(*Mr Meacher*) I wanted Linda to say that because she was the person who had the telephone conversation, but it is quite clear that as the Advanta memorandum is written, it is not true that the conversation indicated that no offence had been committed; simply that the basis for the commission of an offence was established. The further statement that no further action will be taken was not, I understand, stated. Certainly nothing that would suggest that there might not be a prosecution. There is no suggestion that there would be, but there was no suggestion that there would not be.

127. May I take us then on to the issue of regulations. We have danced around it and maybe we have covered it in sufficient detail, but so that it is absolutely clear for the record. If the general public make—whoever the general public may be—a clear decision that they wish their food to be non-GM, can we put a regulatory regime in place? (Retrofitted because obviously we are talking about flows of seed from one year to another.) Is it possible to put a regulatory regime in place in this country and in Europe to allow that to be the case? That is clearly something that we need to know.

(*Mr Meacher*) Let me start off. We are concerned that the regulatory framework needs to be tightened. It is perfectly clear from all the discussion we have had this morning, that in terms of the Seeds Directive with MAFF responsibility, we are looking for greater clarity at an international level. With regard to the DETR responsibility, which is the conduct of the field-scale trials, we also believe that there needs to be a tighter regulation, which we have been seeking through the provision of 90/220. The Environment Council has reached a common position on it. The European Parliament has put forward a number of significant amendments and it is likely that there will be the normal conciliation process over the course of the autumn. Obviously, we welcome that. I should say that the revised 90/220, I think, is an important measure. It is not marginal. It does, for the first time, standardise the risk assessment; and I have to say that whereas I think we are pretty stringent in this country, it is not always the same across the EU. So it is important because we could be the recipient of products from them. It lays down the requirement for post-market evaluation, so that is not just monitoring up to the point of sale, but beyond. It removes antibiotic marker genes for well understood reasons. I think that could compromise the effectiveness of antibiotics for medicinal purposes. It lays down time-limited consents, in this case ten years. There are a number of other measures

[**Mr Drew** *Cont*]
about verticalisation; equivalent legislation; all of which seeks to give greater clarity to the industry. This is the reason why I think the industry welcomes it, and at the same time gives greater protection to consumers. So it is very important that we get that measure into place as soon as we can. The one issue, which I think is still lacking from it, is the whole issue of liability, which is a very important issue. At the informal council, which was held in Paris over this last weekend, which I attended, one of the results of the discussion—I have to say this was not a negotiating session, not a formal council, but at an informal council, where Dominique Voynet, my opposite number in France, decided to have a focused debate on her attitude to this whole question of GM—there was agreement by the Commission that they would come forward with further tighter proposals on labelling and traceability and on liability, as a basis for looking again at the question of the issuing of marketing consents. So all of this, I think, is good progress. When I come to your specific question: can we have a regulatory framework which will guarantee that there would not even be trace elements? I think the honest answer has to be that we cannot. In these islands, which are so small and where 60 million people live, as compared with the prairies of North America, where they have GM here and hundred of miles away they have the rest of the biodiversity and conventional crops, they can do that. We cannot, or probably elsewhere in Europe. What we have to do is to ensure that those elements, which I call trace elements, are of the minimalist kind. What those acceptable thresholds are to our consuming population, I repeat, is something that they should have a major say in deciding. Zero is probably impossible but whether it should be 0.1, 0.5, 1 per cent or whatever is, I think this is a very important issue for public debate, in which the consumer must have a serious, informed and effective voice.

Chairman

128. What do you think?

(*Mr Meacher*) As I have already said, it is not a matter for Ministers or for officials. It is for the consuming population. My view, as the Environment Minister, is that it should be the minimum that we can control. I think the O.1 per cent, if that is practicable, is probably at the kind of level which would satisfy consumers. My view is only just one of 60 million people in this country. It is not a matter for Ministers to lay down, set down an edict, and thus it will be. I really mean it when I say that the consumer should have a voice.

Mr Drew

129. May I hear Helene's response to that. Then I will come on quickly on the back of what Michael has to say on product liability.

(*Baroness Hayman*) I think Government can put in place within the European framework, because it has to be European, a labelling regime and a system of tolerances that feed into that labelling regime, including definitions of "GM free", which we have not yet got, that enables consumers to make their own choices. As long as you have a framework at a European level that allows for the approval of GM crops or food after very strict assessments, if crops and food go through those assessment processes, and if we have no evidence about harm to health or the environment in order to create a barrier to trade, then my understanding is that we are bound by those rules. Now that does not make anyone have to buy a product they do not want to buy, but the existence of a framework for approving crops or foods that contain GMOs, presupposes that this is the regulatory framework; so I would not want to mislead you in the sense of the ability to act unilaterally without any evidence of harm. That is why I think it is very important that we understand, for example, the effects on biodiversity of crop production in this country, because the attitude that people might have in the prairies to growing something could be quite different from the attitude that we have here because of the effects on the biodiversity. If we had the evidence on that, then we could take appropriate regulatory action.

130. May I come back quickly on the product liability issue because clearly, to my mind, regulation is really only as effective as the people testing and trialling and so on. Clearly product liability does put the obligation of those who produce, distribute and so on to be accountable to what they say, what is the label on their particular food. Now clearly with product liability we want it in yesterday because that would significantly help. Can you foresee, if consumer pressure is such, that consumers will want to take—maybe their own legal action—where they buy GM food according to the label and it is proved subsequently that it is not GM free? Clearly, product liability is crucial to that and something that we must want to see as soon as possible.

(*Mr Meacher*) I am in favour of it for the reasons that you have given. On behalf of the United Kingdom I put down a minute statement at 5.30 in the morning, concluding our discussions of the revised 90/220, and asking the Commission to go away and come back with a specific environmental liability provision with regard to GMOs. The Commissioner, of whom I have great respect, takes the view—or at least until the informal council this last weekend has taken the view—that it should be covered by a cross-cutting environmental liability provision, which would apply not just to GM but for the whole range of environmental damage from whatever source. It is her intention to produce a statement, a White Paper, a communication on this, by the end of next year. I might say this has been under discussion for something like ten years. Even so, that is quite an ambitious target, given the range of it. The problem, as I have indicated to her, is that countries like the United Kingdom have a problem in the meantime. Her response is, "Well, you have your national provision." The national provision turns out to be the common law in respect of the tort of nuisance, which the Victorians formulated 100, 150 years ago, rather a long time before GMs were ever thought of and, of course, are not directly applicable. There is the famous case of *Rylance v Fletcher* which deals with this. In answer to your question, will consumers or public interest groups like the NGOs, if they have the power to do so, will they take action

[**Mr Drew** *Cont*]
in the courts where they find that they have not bought the product that they expected? That is clearly possible. They would, of course, under the current law, have to show harm, not simply that they were sold something slightly different from what it said on the label. They would have to show not only was that true, but they suffered some harm as a result. Now I believe that there will be a testing of this in the court before long. That would be my expectation.

131. Very quickly, my final point. The industry, according to Advanta, welcomes product liability. Does that help the speed by which this can be put in place? If the industry is itself saying, "We want regulation, we want product liability," one wonders why it is taking so long. Obviously, there are a lot of legal niceties to be gone through, but one would have thought that this is something which needs to be moved at the speed of lightning.

(*Mr Meacher*) I agree with you. I strongly agree with you. If Advanta have said that, then it must be helpful. I can see that the industry wants clarity and certainty and stability. The problem is that it has fallen between a number of stools here. Should this be UK legislation, which would be rather odd when the Commissioner has indicated that she is bringing in a wide-ranging, across-the-board environmental liability provision to cover all environmental damage. There will be resistance, I understand, in that situation, to bringing in our own UK law. On the other hand, is that overriding provision going to be able to deal in quick enough time with a problem which is acutely pressing in this country?

132. The problem is that even if she does produce this document by the end of next year, we estimate that it could take between three to five years before it is made law and transposed into national legislation. I am concerned about that gap. I am still very concerned about it.

Chairman: Whilst we are talking about the speed of lightning, we will go over to Mr Öpik.

Mr Öpik

133. Dealing with it in terms of the environment, if there is a non-zero threshold and there does turn out to be a problem with GM in the environment, what do we do then?

(*Mr Meacher*) That I think is exactly what Mr Drew has just been questioning me on. What legal redress is there for someone who has been sold a product which was not what they expected?—I think this is what you are saying—the level of threshold.

134. I am not really looking at it from the public point of view. I am looking at it from the ecological point of view. What happens if we set a non-zero threshold? Therefore, there are viable plants out there which are probably cross pollinating, and it turns out that there is an ecological problem?

(*Mr Meacher*) If the result of the farm-scale trials is that the null hypothesis—which is that there is no difference in impact on the environment from the use or management of GM crops, applying particular herbicides; no difference from that which is applied to conventional crops—if that null hypothesis is not proven, then we would take action to prevent the commercialisation of GM crops. Now we would have to look at exactly what that evidence was. Whether it required a modification. Whether there was serious damage which was endemic in the use of GM crops or the management of those crops. If there was, we would certainly prohibit further commercialisation of GM crops.

135. Has the Government made any contingency plans—I accept this is unlikely—were it to find that GM product crops were damaging the environment? Has the Government thought about how it would close the stable door after the GM has bolted?

(*Mr Meacher*) If you are saying to me that this voluntary agreement is not sufficiently continent, in the sense that the isolation distances to contain the GM impact on the environment is not secure and sufficient cross-pollination takes place, my response to that is that I do not believe that those effects are on a scale which does cause at all significant damage to the environment, but in order to be very careful, that is why MAFF are carrying out their review of our isolation distances. If we can reduce what is already an minimal impact even further, we will certainly consider that.

Dr Turner

136. If I can return briefly to this issue of acceptable levels of GM content, and initially concentrate entirely on where the GM content is known to present no danger to human health, and is also thought not, on available evidence, to be of any likely harm to the environment: concentrating on that mix, that does not seem to be a very rational reason for fixing 5 per cent, half per cent, 0.5 per cent, or any other figure. Is that the case or does the Government have a view as to how we should arrive at a figure; and should this be plucked from the air?

(*Mr Meacher*) As I have indicated my view, and it is only my personal view, is that there has to be—

137. I was asking for a Government view. If we are going to negotiate in Europe and this is a European discussion, are we waiting for someone to tell us or do we have a view?

(*Mr Meacher*) We have not had the systematic discussion about the threshold level for seeds, the 0.5 per cent that Baroness Hayman referred to, we are in the process of having that discussion but we have not had a formal discussion as such about that. We have already had the agreement of the Agricultural Council to a one per cent labelling requirement and, of course, one asks do the buying, consuming populations throughout the EU understand and accept that? I do not know the answer to that. Do they realise what those provisions are? Do they find them wholly acceptable? You are asking if it is a GM construct which is not required either by ACRE or ACNFP as a risk to health or the environment, should we worry about what the level is? My answer to that again is that is a matter in which consumers should have a say. The problem arises—this is at the back of so many consumers' minds—that Government has in the past in good faith stated there was no risk, a classic example of this was BSE and CJD, and they were wrong. I think consumers understand that they want that risk, therefore, to be minimised because 15/20 years down the track there

[**Dr Turner** *Cont*]
can be no-one scientifically or technically who can be absolutely certain of the results. That is why they want to have—

138. If you ask somebody what do they want, they will say "We will have it pure. What level of mix do we want? Zero". I know as a former scientist that if I wanted 99.999 per cent gold I paid a different price than if I bought a nine carat gold ring. We normally have mechanisms where the market is allowed to determine. We have that, for example, in organic produce where the consumer, through the marketplace, can in fact show what the costs are. Advanta's evidence to us is if you insist upon .001 certainty you are talking about testing, millions of tests on every batch of seed and clearly there are cost implications in driving towards the zero figure which the normal public would simply pluck from the air. Does there not have to be a mechanism where the public can, in fact, vote through the marketplace and if something is going to be called GM free that may be a much higher standard and the public would have to pay to buy it than if the public were not so concerned and were willing to accept two per cent or something of a mix of something which is thought to be publicly safe? Is there not a mechanism which we ought to be looking to which is market driven?

(*Mr Meacher*) I have spoken at length about this, Helene can answer.

(*Baroness Hayman*) I agree with that and that is why I bang on about the need for definitions of GM free as well as the need—

139. Can I return to my first question.

(*Baroness Hayman*) As to what the tolerance should be.

140. It will be interesting to see what comes out of Europe rather than listening to it. Are we pushing these views?

(*Baroness Hayman*) Certainly. When I was dealing with food before the FSA was created I was pushing not only to have tolerance in terms of what needed to be labelled as GM. My guiding principle, rather than the figures for the tolerance, would be that which is measurable and enforceable throughout Europe. That was how we ended up with the one per cent of an ingredient in a food. To set a standard that cannot be measured consistently and enforced is not something that is appropriate for a regulatory body. You asked about whether 0.5 per cent as a working example on something that had a part C marketing consent was appropriate when, if it was poppy seed rather than a GM construct seed, purity levels would allow you to have a higher level of poppy seed. I think that the general view is that we ought to aim for minimum presence of GM material in seeds that are marketed as not GM. Therefore, you go for the lowest levels that you can consistently test for and assess, but those are unlikely to be nil for all the reasons we have discussed, including the fact that 40 million hectares in the world are now planted with GM crops. I do think that the opportunity for the market is there and this is already happening in terms of people selling produce that has higher levels of identity preservation all the way down the chain, right through to seed. That does have a price with it. I do believe that there is a market for that and that market will develop. Government's regulatory responsibility is to make sure that those claims are verifiable and if the claims are made and they are not true there is, through consumer protection legislation, some come back on that. You mentioned organic production, there have to be tolerances set in the definitions of "organic" and they are set for ingredients, for example, in prepared organic food. Everyone has to deal with these issues, the definitional issues, in order to provide a regulatory framework that people can use.

141. Is not the role for government really just to make sure that it addresses the safety issues and to leave some of the other issues to the market?

(*Baroness Hayman*) I think the issues of safety—

142. Once you protect the environment and once you protect health as well as science permits in terms of what your regulations are—

(*Baroness Hayman*) I think there is a third role. That is the predominant role of the Government and that is our predominant responsibility but I do believe in today's world we also have a responsibility to facilitate consumer choice and that does take you into those areas of labelling and thresholds and everything else.

Mr Mitchell

143. Is there any formal mechanism for requiring or allowing Member States to share information on incidents like this?

(*Baroness Hayman*) No, I do not believe that there is. In the informal proposals being discussed at the moment there will be an agreement to share that information which as I think I alluded to earlier, would be very helpful.

(*Mr Meacher*) I think obviously what Helene has said is right, there is no formal mechanism. I think that under 90/220 there is a general duty on Member States to co-operate in sharing information which is going to minimise damage to health or the environment from a deliberate release but we need to formalise the mechanisms by which that can be done. Indeed, I do think that the revised 90/220 does improve the procedures in regard to exchange of information.

144. There has been GM contamination in seeds in other countries like, for instance, maize in France or cotton in Greece and rapeseed in several countries. Do they have the same hoo-ha that we have had or do they deal with it more expeditiously, or what?

(*Mr Meacher*) I think they do actually. The Greek Minister at the informal council I have just attended was lamenting the problems over the degree to which cotton seed had been affected in Greece and the inability to deal with it in a way that he regarded as satisfactory. It is also significant that the French press, as you have just said, referred to the possible likely contamination of something like 3,000 hectares in the South of France and, through the British Embassy, we have been pressing them to provide information about that. This goes back to the difference between Sweden and the UK. The French authorities have so far not been able to provide details of the nature of the maize varieties.

(*Baroness Hayman*) It came in yesterday.

[**Mr Mitchell** *Cont*]

(*Mr Meacher*) It came in yesterday. I am not up to date. It has taken them something like three weeks, because timing is of the essence. I do not wish to vilify, I am sure, their best efforts.

145. What procedures have been put in place to share information with other authorities? Devolved authorities in the UK seem to have been told what was going on a bit late.

(*Mr Meacher*) I think you know the answer to that.

146. That is why I asked the question.

(*Mr Meacher*) We have formally apologised that they were informed on 15 May. I think there was some reference to a Scottish Executive official in the context of a meeting on another issue on 5 May but it is unquestionably true that we should have brought them in earlier and we have apologised for that.

Mr Jack

147. Can I ask about what appears to be the establishment of a new Pontius Pilate approach to policy making which you, Minister, have identified which is these are issues for the public when we are talking about purity levels. Does this now mean you are going to extend it to things like, for example, motorists setting their own speed limits because they can make a better judgment as to what they think is a safe speed? Where does this thing end? Government is there to make decisions, not sub-contract the whole business out. We might as well have a national referendum on everything. Seriously, what are you there for?

(*Mr Meacher*) I thought Mr Jack came from the deregulatory authority but I can see he has now joined the centralising tendency. I do not think the analogy can be pressed very seriously with regard to speed limits. Obviously Government has to take a decision which will minimise loss of life, there is no question about that, but we are talking about something very different, a situation where there is no evidence at the moment that there is any risk to health and safety or to the environment. At the same time there is, for all the reasons we have heard, immense public furore about this issue. I do think democracy does mean listening to, consulting and taking account of the views of your citizens. I think this is a totally appropriate area where we should listen further to them.

Chairman

148. Thank you very much for that. If I may just add to Mr Jack's comment, of course one has got to make sure that one's citizens are forming their opinion in the light of what is reasonable because there is a sign which says if it is not possible to get reasonably below a certain level the Government does at least have a job in making sure that the opinion it garners is representative and, secondly, that opinion is expressed upon the basis of reasonable parameters.

(*Mr Meacher*) I am sorry, perhaps I gave the impression that we are, on the Pontius Pilate analogy, washing our hands of it and saying "over to you", but I do not think we are saying that at all. I was not saying that at all. I was talking about a proper democratic consultation in the light of which Government has to form its view. Of course we have to take account of the practicalities, the legalities, the complexities of this which will be lost on most people out there shopping in the supermarkets but they do have a view as to the outcome that they would like to see and we should listen to that very carefully.

Chairman: The apocryphal supermarket shopper features heavily in a lot of our discussions. Thank you very much for coming. The usual applies about material you are going to send or anything you may wish to say. I am not quite sure whether I am expecting somebody to prosecute Advanta and Advanta to sue you, but if that happens, as I said, the lawyers at least will get profit from it. Thank you very much indeed, that has been an extremely helpful session from both yourselves and the previous witnesses, we will now decide what we are going to do with it. It has been very productive. I would not bank on this being your last appearance given the nature of the subject. Thank you very much indeed.

APPENDICES TO THE MINUTES OF EVIDENCE

APPENDIX 1

Memorandum submitted by the Scottish Crop Research Institute (G 2)

SUMMARY

Gene flow, when considered on a regional scale in realistic contexts, is more frequent and can occur over longer distances than some previous studies suggest. Such gene flow generally does not normally compromise the ability of seed companies to meet purity standards for conventional crops. Some of the factors which influence the rate of gene flow over longer distances are known. Low levels of gene flow over very long distances are inevitable for some crops. It should be noted that such gene flow has been a feature of agriculture since man first attempted growing crops.

1. The Scottish Crop Research Institute is a Non-Departmental Public Body funded by grant-in-aid from The Scottish Executive Rural Affairs Department and by competitive income from a variety of sources. A special strength of the institute is the wide range of skills of its scientists and the integration of these skills to tackle important issues in crop biology.

2. For about a decade, SCRI has maintained a forward-thinking programme of research on gene flow and other types of risk assessment studies, including participation in the current Farm Scale Evaluations of GM Crops. These projects, primarily won through competitive bids, are listed in Annex 1. During the Committee's deliberations on the Segregation of Genetically Modified Foods in December 1999, SCRI's MAFF-funded research on the quantification of gene flow at the regional scale was discussed by Professor Alan Gray of ITE and ACRE. Aspects of SCRI's investigations of the persistence of feral oilseed rape plants in a project funded by DETR were also discussed. These studies have, in part, looked at the "long tail" mentioned by Professor Gray of cross-fertilisation over distance or population persistence over time and bring together expertise in genetics, pollination biology, seed-bank dynamics, vegetation systems and mathematics.

3. A particular focus of the SCRI studies has been to consider events at the regional scale. This regional focus has brought with it higher estimates of gene flow through pollen movement than in earlier studies, and raised controversy on a number of occasions. We consider these studies to be relevant to the understanding of the segregation issues arising from the recent problem with GM-tainted seed sold by Advanta, and offer this note to the Committee to aid its deliberations.

4. In 1992, SCRI reported that oilseed rape plants, deliberately emasculated, could be pollinated 2.5 km from fields of the crop[1-4]. In 1997, MAFF funded a three-year programme at SCRI to quantify gene flow at the regional scale. At every distance from oilseed rape fields (up to the 4 km tested), pollination events were detected on genetically male-sterile recipient plants[5-7]. Parentage was verified for some events by DNA fingerprinting[8]. Genetically male-sterile plants (of a similar type to those used by Advanta in F1 Hybrid seed production) were used in this study to enable fertilisation events to be detected readily on a relatively large scale. The lack of competition from self pollen does, of course, also enable higher rates of cross-pollination. Experiments to quantify this aspect are not yet complete, but are a main focus of the remaining experimental work of the project.

5. Understanding the mechanism of pollen transfer in any crop is important for the prediction of the decay of cross-pollination with increasing distance from the source. Honeybees were identified as important vectors in long-distance pollination events in oilseed rape[6]. They may be expected to transfer pollen up to 5 km and perhaps in very exceptional situations up to 10 km in any direction from the hive. The foraging range of other social pollinating insects such as bumble bees, or the dispersal of other potential pollinators such as pollen beetles and flies is less well known but will, along with airborne pollen, make a contribution to gene dispersal in oilseed rape. Such gene flow will likely extend well beyond the distances already observed.

6. F1 Hybrid seed production in oilseed rape entails growing strips of male-sterile lines interspersed with strips of pollen donors. Honeybees are normally introduced into the area at higher densities than is optimal for honey production to ensure the efficient transfer of pollen. In these circumstances, foraging well beyond the confines of the seed production plots is inevitable. The blocks of male-sterile plants in such seed production systems will encourage a degree of cross-pollination, not just to nearby intended male parents but also to other fields in the region, although the majority of pollinations will still be with the intended parents.

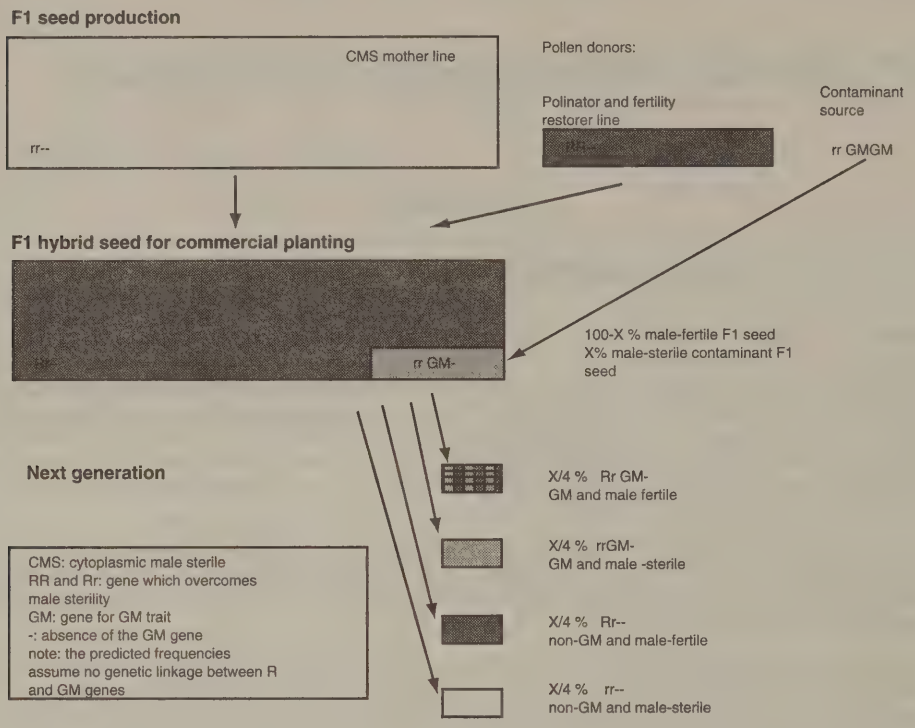

Figure 3

Predicted transmission of a contaminating GM trait into a commercial F1 Hybrid field containing X per cent male sterile GM contaminants and propagation into the succeeding generation.

7. In F1 seed production systems, male-sterility is normally transmitted through the female line, from mother to daughter. When the pollen arriving on the mail-sterile plants carries a restorer gene, the plants grown from these seeds have normal fertility. Such restorer genes are unlikely to be present in neighbouring fields and hence the seeds produced by unintended crossing give plants which are in most cases male-sterile. Advanta use this system to generate restored F1 hybrid seed under the cultivar name Hyola. Seeds produced in Canada have contained a small proportion of GM and male-sterile off-types, apparently from crossing the fields 800m or more distant. A normally male-fertile oilseed rape flower is shown in figure 1 [not printed] and a male-sterile flower with small anthers from a RoundUp Ready contaminant in Hyola 38 is shown in figure 2 [not printed]. Some predictions can be made on the fate of male-sterile contaminants in restored F1 hybrid cultivars. They will be adequately pollinated by neighbouring plants and will contribute fully to the seed harvest. If these seeds are grown again about half will be male-fertile as about half of the pollen grains produced in the field carry a restorer gene. Equally, the male-sterile contaminants will transmit the GM trait to half of their offspring (figure 3) and thereby the level of GM contamination in the stock in this second generation will be halved.

8. It should be re-iterated that ACRE have been aware of the gene flow research at SCRI through scientific papers, meetings and personal contacts, and have taken account of our results in their deliberations. It has not been their intention to ensure zero gene flow from GM field releases, but to accept that some gene flow will occur and to focus on its implications. One contribution of our research to the debate has been to point out that levels of gene flow depend totally on context. In the presence of efficient insect pollinators such as bees, in realistic situations where a patchwork of large pollen sources can be expected, and where the ability of small patches of recipient plants to receive pollen is maximised, surprisingly high levels of gene flow can be detected over very long distances. Changing one of these criteria, for example where recipient plants are fully male-fertile or are present in larger blocks, will reduce the height of the "long tail" but probably not its length. In other words, seed production, even if not using a male sterility system to generate hybrid seed, will always be liable to contamination from distant sources at a low level. "Distant" in this context could mean a few hundred metres, a few km or even a few hundred km. The seed industry already has experience of meeting the requirements of purity thresholds laid down for non-GM seed crops. Increasingly stringent thresholds would, on the basis of our results, become increasingly impractical for seed producers to meet as technological advances in detection accrue and as some insist on the right of absolute freedom from all traces

of detectable GMOs. It may be argued that in an agriculture where there is still the possibility of meeting the rights of farmers and consumers who wish to realise the benefits of the technology, sensible threshold levels should be adopted. In this context, the move towards setting thresholds for GM admixture in non-GM seed stocks is welcome and will provide certainty and security for both the seed producer and the consumer.

9. In addition to issues of GM admixture through cross-pollination, there are other routes through which OSR genes may become dispersed in space and time. Feral colonies and volunteer plants occur through local spillage at the production site, during bulk transport, on farm machinery, by the use of agricultural soil containing seeds in landscaping, and possibly by birds. Although most such colonies do not appear to persist, some are capable of surviving for 10 years or more[9].

10. Many of the notes above apply to seed crops of oilseed rape. Oilseed rape has all the features required for interesting pollination biology: a high attractiveness for bees and indeed beekeepers intent on a honey crop; open flowers also visited by pollen beetles, seed weevils, lepidoptera, hover and other flies; pollen which can become airborne and travel far in large quantities in the right conditions; and a somewhat unpredictable ability to freely accept self pollen or promote out-crossing. Other UK crops can be self-pollinated, vegetatively propagated, wind-pollinated or pollinated by different types of insects. Realistically, no UK crop will fall completely into one category: various combinations of some of these elements will contribute to gene flow. Many are, however, predominantly self-pollinated and are unlikely to arouse such intense interest in gene flow as oilseed rape.

11. It is important to retain a sense of perspective in this debate. Almost all of our crop and horticultural species are effectively aliens to UK ecosystems. Indeed many crops, including *Brassica napus,* oilseed rape, are hybrids which do not occur in nature and are assumed to have arisen in man's fields. Despite extensive use of GMOs in countries less nervous about the technology than the UK, no confirmed adverse effects on the environment have been reported. According to the report of the recent OECD conference in Edinburgh earlier this year "many consumers eat GM foods and no significant effects have yet been detected on human health". At some time in the future, GM approaches may be more readily accepted by the UK public as a supplement to more traditional breeding practices including the movement of genes between species by hybridisation and artificial mutagenesis. The challenge facing us now is to ensure that by reducing the climate of distrust by every available means, including careful regulation and the underpinning science which informs it, this acceptance is not delayed far into the future.

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11 July 2000

Annex 1

RELEVANT PROJECTS UNDERTAKEN AT SCRI

Industry/AFRC/DTI PROSAMO initiative (participant), 1989–91.

SERAD FF340 Computation of safe isolation distances for field-grown genetically modified crops. 1991–95.

DETR PECD 7/8/237 Investigations of feral oilseed rape. 1993–96.

MAFF RG0208 (Desk study) Risk assessment of the release of genetically modified plants: a review 1994.

SERAD Modelling impact of herbicide resistant transgenic oilseed rape. 1995–96.

MAFF CSA4202 An experimental and mathematical study of the local and regional scale movement of an oilseed rape transgene. 1997–2000.

MAFF CTB9802 (subcontractor to CSL) Consequences for agriculture of the introduction of genetically modified crops. 1999–2001.

DETR Farm Scale Evaluations of GM Crops. (participant) 1999–2002.

APPENDIX 2

Memorandum submitted by Mr Peter Lundgren (G 3)

Thank you for the opportunity to contribute.

INTRODUCTION

I do grow oil seed rape but fortunately I did not sow the variety Hyola this spring, however I have spoken to some of the farmers who have been affected. I am hopeful that some of them will contribute their experiences to the Committee but they are very anxious that they may damage their businesses by "going public". There is a real possibility that farmers growing GM crops, even inadvertently, will see their land devalued and will lose the opportunity to supply GM free markets.

CONTAMINATION

Press reports show that Advanta became aware of the contamination on 3 April, Advanta then waited for two weeks before informing the government on 17 April. The government and Advanta then sat on the information until 17 May before announcing to the public that farmers had inadvertently sown GM contaminated seed. This timescale is significant because on 3 April a considerable quantity of the Hyola seed was still in farmers' stores waiting to be planted—especially in the North and Scotland—and if Advanta had recalled the contaminated seed immediately, a majority of the affected farmers would have avoided the problem.

When the farmers and the public were informed of the problem there was no clear coherent advice for farmers, even though MAFF had known of the problem for four weeks. I phoned the Ministry of Agriculture on 23 May, just 10 days before the deadline for planting crops and claiming Area Aid Payments (the last day that farmers could destroy the contaminated crop and replant), to discover that there was still no clear advice for farmers and that the Ministry was advising that the crop could be sold, even though the contaminant, RT73, is not cleared for growing in Britain. It was the following weekend that the Minister for Agriculture stated that farmers could continue to grow the crop but would not be able to sell the crop in Britain, however, they would have to sell the crop abroad—chaos. Again, there was no advice for farmers who wanted to destroy the crops, liability, compensation and complying with IACS regulations.

At this time some affected farmers took the decision to destroy their crops publicly and we owe them a debt of gratitude for presenting a positive image of responsible farming which deflected public anger away from farming towards the biotech industry and the government.

Both Advanta and MAFF seriously underestimated the public reaction to the news that contaminated crops were growing—one has to wonder which planet they have been on for the last 12 months—and failed to get information to farmers quickly, failed to give clear advice as to the options of destroying or retaining the crops and failed to advise farmers about compensation for both the growing crop and any further losses.

Looking back it appears that both Advanta and the Government were more interested in reducing their liability and protecting their own interests than in looking after the interests of the farmers and the general public.

The lack of immediate and decisive action has lost the confidence of the farming community in the Government's ability to regulate the introduction of GM crops.

CROSS POLLINATION

Advanta have stated that the Hyola seed was contaminated by cross pollination and was growing 1,600 metres away from the GM crop, considerably in excess of the 800 metre separation required under Canadian regulations for seed production and the 200 metres recommended by SCIMAC (just 50 metres for food crops). Some reports suggest that the seed was contaminated by both glyphosate resistant genes and glufosinate resistant genes.

Reading the Agriculture Committee's report "segregation of genetically modified foods" it appeared that the members were concerned that the SCIMAC segregation distances are insufficient to give farmers the choice to produce GM free foods and the public the choice to consume GM free foods.

The contamination of rape and maize seed crops over great distances demonstrates that the incidence of cross pollination between GM and non GM crops will make it extremely difficult to preserve that choice with home grown produce. The idea that "mixed GM farming" can take place with both GM and non GM crops of the same species on the same farm, or that one farmer who is GM free can co-exist with a neighbouring farmer growing GM crops is questionable.

Professor Bevan Moseley, Chairman of the EU Novel Foods working group, recounts that on a visit to the USA and in conversation with the USDA, biotech companies and soya growers, the idea was entertained that farmers in the northern states (Ohio and Minnesota) could grow GM free soya and export to Europe via the Great Lakes while GM crops could be grown in the southern states and exported down the Mississippi. The idea that "mixed farming" and keeping the crops segregated was thought not to be practical.

In a small and overcrowded island like Britain we are soon going to be at the point of no return. When a given percentage of GM crops are being grown then it will be impossible for any British farmer to claim to be producing GM free food from crops where a GM equivalent is also being grown. If consumers continue to exercise their choice to purchase GM free foods and British farmers are unable to supply that market, then others will step in. New Zealand's farmers have taken the decision to be GM free and not to allow the field scale trials or commercial growing of GM crops, so if British consumers want GM free lamb, butter, reconstituted milk and "squirty" cream then New Zealand's farmers will be happy to supply our customers. Countries like Brazil have already taken steps to ensure a supply of GM free soya and take a big chunk of the US export market. In England, a group of 25 dairy farmers have revealed plans to build the first factory to specialise in GM free milk, processing over 200 million litres a year at a total cost of £30 million for the venture. Local group Lincolnshire Quality Beef and Lamb report that the Co-op supermarket chain is extremely interested in sourcing meat derived from GM free rations.

The demand for GM free foods, along with meat, eggs and dairy products derived from GM free animal rations, is growing. In order to satisfy this premium market British farmers need GM free seed and a GM free environment—this does not mean a ban on the growing of GM crops but it does mean that those wishing to grow GM free crops should be able to do so with a minimal risk of cross-pollination and contamination, and that the threshold for GM contamination must be set at a level that is acceptable to our customers.

British farmers can produce far more of the national diet. Farmers can grow the protein crops, such as peas and beans, that can replace imported GM soya for processed foods and animal rations. British farmers must have the opportunity to supply our own markets for GM free produce and to benefit from the opportunity to develop new export markets from GM free produce.

In a final twist, I understand that Advanta is moving the production of conventional seed varieties to New Zealand where there is no risk of GM contamination and they can guarantee GM free status. Surely this is an opportunity that ought to be open to British farmers—or is this country already deemed to be contaminated?

10 July 2000

APPENDIX 3

Memorandum submitted by Mr Peter Start (G 4)

Perhaps you will permit me to put forward at this time, my genuine concerns and fears relating to the ongoing GM scene which confronts those of us who oppose it.

I admit to having, from the outset, a natural abhorrence towards these products of the biotechs, as that is how I perceive them. Nothing to date convinces me that these products are necessary or justified, in any part of the world. In the infancy of the science and application, safety assurances are quite meaningless. I suspect they are just a means to an end.

History clearly tells us that we do not learn from our mistakes and I greatly fear we are creating a legacy which future generations will neither understand or thank us for. Please bring it to an end without delay.

9 July 2000

APPENDIX 4

Memorandum submitted by Mr M Gzesiukowicz (G 5)

I am writing on behalf of our organisation, which campaigns for GM free crops and food, in connection with your impending assessment of the implications of the contamination of non-GM/organic crops with GM material and the subsequent segregation of GM and GM-free crops.

1. The recent findings of contamination of the non-GM rape seed shows unequivocally that separation distances between the crops abroad and in this country are completely inadequate and new guidelines should be put in place immediately; with at least 800m separation distances and environmental impact assessments being undertaken.

2. A compensation framework to farmers due to contamination should be set up at once. The "polluter" should pay not only for this but for environmental monitoring to assess the GM organisms in the wild. Totally inadequate research on GM material in the environment has been undertaken and this should be acknowledged and addressed when considering seed contamination with GM material.

3. All seed should be monitored for contamination—as this is obviously widespread: the Advanta oil seed rape is surely not an isolated case and contaminated maize has also been sown in France this year with farmers and consumers the unwitting victims. Testing the seed for GM contamination is a simple process and procedures should be set up immediately.

Also a point to note is that a 1 per cent contamination rate might be acceptable to biotech companies and governments but not to consumers who must be considered in this, together with organic farmers.

I hope that you will encourage proper safeguards in the future.

10 July 2000

APPENDIX 5

Memorandum submitted by Friends of the Earth (G 6)

1. Friends of the Earth

Friends of the Earth (FOE) exists to protect and improve the conditions for life on earth, now and for the future.

Friends of the Earth is one of the largest international environmental networks in the world:

- with over 50 groups across five continents;
- one of the UK's most influential national environmental pressure groups;
- a unique network of campaigning local groups, working in 225 communities throughout England, Wales and Northern Ireland.

Friends of the Earth have been campaigning for sustainable food and agriculture since the early 1980s. The current Campaign for Real Food was launched in May 1997 following increasing concern over the rapid introduction of genetically modified food and crops into the UK and in order to promote more sustainable food and agriculture for the UK.

We support the Five Year Freeze Campaign which is calling for a minimum five year moratorium on:

1. The growing of genetically engineered crops for any commercial purpose.
2. Imports of genetically engineered foods and farm crops.
3. The patenting of genetic resources for food and farm crops.

During the Five Year Freeze the following must be developed:

- a system which allows people to exercise their right to choose products free of genetic engineering;
- public involvement in decisions on the need for and the regulation of genetic engineering;
- prevention of genetic pollution of the environment;
- strict legal liability for adverse effects on people or the environment from the release and marketing of genetically modified organisms;
- independent assessment of the implications of patenting genetic resources;
- independent assessment of the social and economic impact of genetic engineering on farmers.

Friends of the Earth have contributed to government consultations on the regulatory framework, changes to the Seed Regulations and labelling of GM soya and maize food products. We have also submitted a response to the Food Standards Agency White Paper and draft Bill. FOE has also written to Ministers concerning the regulatory system for GM deliberate releases and risk assessments. FOE have also sought a judicial review of the Government's procedures for the conduct of National Seed List Trials in 1998 and the Provisional Seed Certification Scheme in 1999.

2. Introduction

On 17 April, Advanta Seeds UK told the Government that GM contaminated oilseed rape seed had been sold to farmers across the UK.[1] It claimed that the GM contamination happened in Canada, when pollen from a GM "Roundup" (glyphosate) resistant crop was blown onto conventional oilseed rape being grown for seed.[2] Advanta Seeds admitted that it sold GM contaminated seeds to the UK, Sweden, France and Germany. In a statement to the House of Commons, the Agriculture Minister Nick Brown stated that in the UK "9,000 hectares were sown with affected stocks last year and about 4,700 were sown this spring" and that "about 1 per cent" of this was GM.

After a drawn-out period, the Government finally issued advice for farmers on 27 May, notably that the contaminated crops could not be marketed in Europe. On 2 June Advanta eventually agreed to pay compensation to the affected farmers.

The reported separation distances used in Canada are 16 times greater than those used in the UK to separate conventional crops from GM varieties. FOE has always been critical of these and, more recently, of the outdoor testing of GM crops such as oilseed rape and maize. It is clear that such practices will contaminate non-GM crops and even honey supplies.

3. Contaminated Seed

Advanta Seeds claim that its conventional oilseed rape variety "Hyola 38" was contaminated by pollen from GM oilseed rape resistant to the herbicide "Roundup". The GM oilseed rape was developed by Monsanto, and is a "GT 73" type. The UK Government has said that the rate of contamination was around 1 per cent, but a company selling Advanta's seed to Swedish farmers has stated that "parts of this year's imports from Canada of the same variety have been shown to contain some 2.6 per cent of Roundup resistant seed".[3] Until there is independent testing, it is not certain what the real rate of contamination in the UK actually is.

4. Government Delays

The Government knew about the contamination a month before the news was made available to farmers. If Ministers and Advanta had immediately made this knowledge public many farmers would have been able to avoid planting the contaminated seeds.

The UK contamination only became public after the Swedish Government made a statement on 17 May. The UK then gave an answer to a Parliamentary Question on that afternoon followed by a Minister's statement the following day.

It was not until 27 May that the Government finally issued advice to farmers that there was no marketing consent for this crop.

5. Double Contamination

When the story first broke on 17 May, Advanta informed FOE that the seeds were not only contaminated by Monsanto's GT73 but also by glufosinate-resistant oilseed rape produced by Aventis. Government officials confirmed on 27 June with FOE that they had known of this possibility from the start but that no public statements were made. The "double" contamination was also confirmed in an article in Farmers Weekly (23 June 2000). This revealed that scientific tests carried out by Reading Scientific Services Ltd on the Advanta seeds had discovered the presence of the Aventis gene. Personal communications with the scientists involved confirmed that the Aventis gene had been found and that they had failed to find the Monsanto gene.

The Aventis contamination has implications for the Government's farm-scale evaluations, as these use Aventis GM seeds and are looking at gene flow as well as biodiversity impacts. At least one of the farm-scale evaluations has used the contaminated seeds in the "non-GM" half of the trial.

This episode calls into question the Government's openness on this issue and emphasises the need for Government and Advanta to publish a full statement on what actually occurred.

6. Illegal Seed

Before GM seed can be sold in the UK and Europe, it must have an EU wide marketing consent under the GM "Deliberate Release" Directive 90/220. There is no marketing consent for "GT73" GM oilseed rape varieties. In fact, it is not clear whether Monsanto have even made an application. Without a marketing consent, GM oilseed rape crops cannot be sold for food or industrial purposes, or fed to livestock.

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[1] Nick Brown. Statement on GMOs in Conventional Crops, 18 May 2000.

[2] "Technical Note by the Ministry of Agriculture Fisheries and Food on Male sterile hybridity".

[3] Information from Swedish Board of Agriculture. Translation of order issued to the company Svaloff Weibull on 16 May, No 22–2728/00. *Genetically Modified rape seed in spring oilseed rape.*

The Agricultural Minister has stated that the genetic modification involved, known as "GT73", "is one that had previously been approved in the UK under our strict regulatory regime for food use". It is true that refined oil from GT73 GM oilseed rape has permission to be sold in the EU and that this was given on the basis of a report by the UK's Advisory Committee on Novel Foods and Processes (ACNFP).

However, oil from GT73 oilseed rape was authorised under the EU's "fast track" procedure for GM foods which are considered to be "substantially equivalent" to normal foods.[4] The Italian government recently challenged the approval of GT73 oilseed rape oil, claiming that the oil is not actually the same as conventional oilseed rape oil. In fact, they claim that the approval, based on the UK report, is "unlawful".[5]

7. No Risk?

The Government has stated that there is "no risk to public health or the environment".[6] But there seems to be little support for this statement. The Advisory Committee on Releases to the Environment (ACRE) was not formally consulted before the Government made this statement, and nor was English Nature, the Government's wildlife advisor. In fact, rather than supporting the Government's position English Nature have called for all weeds produced from the GM contaminated crops to be destroyed.

In addition, ACRE has previously only considered the consequences of growing small experimental test sites of this type of GM oilseed rape. The current release is not on a small test site but over thousands of acres of the UK countryside.

The Agriculture Minister Nick Brown said in his statement to the House of Commons that "it should also be remembered that oil produced from the crop is indistinguishable from conventional rape oil: no modified DNA will be present". But the EU Scientific Committee on Food considered all the evidence on this issue last year, and concluded that "some refining processes used by industry today may ensure that DNA/protein are efficiently removed. There is no guarantee however that these processes are commonly applied".[7]

8. "Sterile" Seeds

Agriculture Minister Nick Brown has stated that "We believe that there is no threat to the environment because the GM variety is sterile. It is difficult to see how it could cross-pollinate with other plants".

This GM variety is NOT sterile. In fact, the Government has stated that the GM plants will be "male sterile", which only means that they can't produce any pollen themselves. But the "female" part of these plants is fully functional—they are perfectly capable of producing seed if they are pollinated by other oilseed rape plants. The GM plants are mixed up in fields of normal oilseed rape, which produces masses of pollen. As a result, the GM seed produced will get into food and animal feed.

Investigations by FOE have found that the "sterility" claimed for these GM plants will break down in their offspring. A leading seed scientist specialising in seed production of oilseed rape has told FOE that, if Advanta's claims about these GM plants are correct, up to half of their offspring will be GM and resistant to the herbicide Roundup and up to one quarter of the total will be fully fertile.[8] These rogue plants will be able to produce pollen, which could contaminate crops, or spread to wild plants, as well as producing seeds.

Oilseed rape seeds are easily dropped on the ground during harvest—research has found that as many as 10,000 oilseed rape seeds can be dropped per square metre.[9] Oilseed rape seeds can survive in the soil and later grow as volunteers in other crops. If they are dropped on to open ground or alongside roads, they can also survive and reproduce outside agricultural areas.[10]

How many GM seeds were dropped last year in fields and along roads? How many survived to grow as volunteers this year? How many GM seeds from this year's crop will be dropped around the UK countryside this autumn if these GM contaminated crops are not all destroyed? Advanta Seeds and the Government must take action to trace the fields where contaminated oilseed rape was grown in 1999, and control any GM volunteers that are growing in the fields or on roadsides.

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[4] Article 5 of the Novel Food Regulation 258/97 allows for notification of foods "derived from, but not containing, GMOs" which are "substantially equivalent" to conventional foods.

[5] Italian Ministry of Health, Superior Health Council. Notes from General Meeting held on 16 December 1999.

[6] Response to parliamentary question to the Ministry of Agriculture Fisheries and Food. 17 May 2000.

[7] Opinion of the Scientific Committee on Food concerning the Scientific basis for determining whether food products, derived from genetically modified soya and from genetically modified maize, could be included in a list of food products which do not require labelling because they do not contain (detectable) traces of DNA or protein. 17 June 1999.

[8] Personal Communication.

[9] Lutman, PJW 1993. "The occurrence and persistence of volunteer oilseed rape (*Brassica napus*)" *Aspects of Applied Biology* 35 29–36.

[10] DETR, 1999. GMO Research Report No 12. *Investigation of Feral Oilseed Rape Populations.*

9. Protecting UK Crops and Honey

Advanta Seeds has claimed that the contamination of its seed occurred in Canada "Despite being produced to standards well in excess of regulatory requirements".[11] Seed crops in Canada must be at least 800 metres from any other oilseed rape. But in the UK, "certified seed" crops of oilseed rape only have to be 200 metres from other crops, including GM trials, and only 50 metres separate conventional and GM crops. Last year, the Chief Executive of the British Society of Plant Breeders admitted to the Agriculture Committee that UK "certified" oilseed rape seed can have impurities of up to 2 per cent due to cross pollination over the 200 metres separation distances currently used.[12] The fact is that the separation distances for GM crops in this country are clearly inadequate.

The Government has now started a review of separation distances for the GM crops. Whilst welcoming this move, FOE has written to the Agriculture Minister, Nick Brown MP, stating that a meaningful consultation is difficult if the full picture about the Advanta contamination is unknown. We have urged the Government to publish the report of the "MAFF seed expert" who "visited Canada to investigate the position".

When considering separation distances we also need to consider the impacts of GM pollen on other produce, most obviously honey. There is no doubt that honey will be contaminated by GM oilseed rape pollen. FOE monitored pollen movement in the air and by bees around a Farm Scale trial in 1999. GM pollen was found in the air 475 metres from a site, over nine times the SCIMAC separation distance for two oilseed rape crops. GM pollen was collected at bee hives 4.5 kilometres from the field. FOE has also found GM pollen in retail honey samples produced near GM oilseed test sites in England.

None of this is surprising—MAFF and DETR are well aware of the facts about how far viable pollen will travel but have chosen to ignore the economic impact that this might have in a country where the majority of farmers are required by the market to be "GM-free" (or at least to have no detectable GM content in their crops).

Research on cross-pollination has shown that it is not uncommon in oilseed, maize and beet over distance well beyond SCIMAC's separation distances.[13] The inevitability of cross pollination was also conceded in a report to MAFF by the John Innes Centre.[14]

The only practical safeguard for seed purity, non-GM farmers and beekeepers is to prohibit any outdoor GM planting of crops that produce viable pollen.

10. Action Required by Government

FOE believes that the Government must take the following steps to ensure the safety of the UK environment and the livelihoods of those farmers affected by this contamination:

1. Mount a criminal investigation into how the Advanta contamination was allowed to occur.
2. Trace those farms where the contaminated crop was grown in 1999 and destroy any oilseed rape growing as volunteers in the field or along transport routes from the farms.
3. Publish all reports into the Advanta contamination.
4. Suspend the SCIMAC guidelines and halt the farm scale trials of GM crops pending a full review of separation distances around GM test sites.
5. Introduce strict liability on the biotechnology industry for harm caused by the release of GMOs into the environment and food chain.

11 July 2000

APPENDIX 6

Memorandum submitted by the National Farmers' Union of Scotland (G 7)

The Union has been asked to submit its views on the implications for the segregation of GMOs of the detection by Advanta Seeds of genetically modified rapeseed in supplies of conventional rapeseed sold in the UK. We wish to express our disappointment at the short timescale given to respond to this inquiry. Given that the issue of the GM contaminated Hyola oilseed rape has been apparent for some weeks now, a longer period of consultation should have been possible and would have resulted in a more thorough submission.

[11] Statement by Advanta Seeds UK. 15 May 2000.

[12] House of Commons Agriculture Committee, Session 1999–2000, Third Report. "The segregation of Genetically Modified Foods" Volume II. Minutes of Evidence and Appendices—paras 24–29.

[13] National Pollen Research Unit. January 2000. "Pollen Dispersal in crops Maize (*Zea mays*), Oilseed rape (*Brassica napus ssp oleifer*), Potatoes (*Solanum tubersum*), Sugar beet (*Beta vulgaris spp vulgaris*) and Wheat (*Triticum aestivian*), Soil Association.

[14] Catherine Moyes and Philip Dale. "Organic Farming and Gene Transfer from Genetically Modified Crops". MAFF Research Project OFO157).

Background

All GM crops currently grown in the UK are grown in test conditions, all crop material is destroyed, ie none of the crop enters the food chain.

It is important to remember that this contaminated seed originated from Canada. It is in no way connected with on-going field trials in the UK.

Existing rules governing seed production include well-established crop separation distances which should result in seed purity of 99.9 per cent. These separation distances were introduced in the UK by SCIMAC, and have since been endorsed by Government.

It is not yet known whether the Hyola oilseed rape was contaminated from a neighbouring GM crop. Therefore, the GM oilseed rape grown in this country may well have been contaminated via other means.

NFUS Position

During the incident of the GM contamination of conventional oilseed rape, our main concern has been the effect on our members' incomes as a result of constraints on "contaminated" produce. We regard the compensation we negotiated with Advanta as fair given the losses and additional costs which most growers will have suffered and also allows for claims on potential unforeseen losses in the future.

As separation distance is an important pre-requisite in producing seed of 99.9 per cent purity, we need clarification of the rules regarding separation distances, especially in the case of Hyola oilseed rape from Canada which was apparently greater than 800 metres away—the separation distance required.

In non-GM seed production, thorough destruction of volunteers is required to prevent the potential for GM volunteers to hybridise with the seed crop.

It is essential that the integrity of non-GM seed can be guaranteed, not only in seed production but also transportation. Regulations governing seed segregation must ensure that there are no opportunities for accidental or deliberate mixing of GM and non-GM seed.

Now would seem like an appropriate time for a review of seed testing regulations.

Conclusion

The Union is in the main satisfied that conventional seed entering this country is of a 99 per cent purity level—as the Hyola oilseed rape was. However, a review of separation distances and segregation regulations, and their implementation, is required to avoid further damage to our industry and consumer confidence.

10 July 2000

APPENDIX 7

Memorandum submitted by the National Farmers' Union of England and Wales (G 8)

Introduction

The NFU would like to note that at this time of year, when farming activities are at a high level, a deadline of nine days for response to such an inquiry, presents difficulties of adequate consultation of our members. Another difficulty is that to our knowledge the actual reason for the contamination of the Hyola oilseed rape in the recent incident has not yet been determined, although it is said to have been caused by cross pollination.

Separation Distances

The separation distances used in the production of non-GM certified seed do not, or never can, guarantee 100 per cent purity of the crop. The distances are based upon well understood principles of pollen dispersal and hybridisation. On a crop by crop basis these latter processes are characterised in the form of a leptokurtic curve. When moving away from the plant that is producing the pollen a point is quickly reached beyond which hybridisation, which is already extremely low, does not significantly decline with increasing distance. In practical terms this has allowed the generation of a set of crop by crop separation distances for the production of certified seed that over 30 years of experience have been shown to usually produce a seed purity level in the order of 99.9 per cent in the case of basic seed.

The Hyola Oilseed Rape Situation

The NFU is in general satisfied with the separation distances presently used for certified seed production. However, there are several potential causes of contamination of certified seed such as has happened in the case of Hyola oilseed rape. These are:

— Recommended separation distances for seed production not used.

— Hybridisation caused by cross-pollination.
— GM volunteers in crop leading to hybridisation.
— Accidental seed mixing.
— Deliberate contamination of seed.
— Two or more of the above.

(a) *Recommended separation distances not used*

The recommended separation distances for seed production for crops such as Hyola oilseed rape in Canada is 800 metres, and in practice companies usually specify 1,600 metres. This is considerably more than that recommended for other oilseed rape varieties. The greater distance is recommended for varieties that contain a significant proportion of male sterile plants as these require greater isolation distances than fully fertile crops. The reason is that each field contains a few male plants. If these are non-functional, of limited function for some reason (eg extreme weather conditions that may debilitate or kill them), or the female plants become fertile before or after the male plants, pollen from adjacent fields, being the only pollen available, could cause cross pollination.

(b) *Hybridisation*

As has already been pointed out, hybridisation would only occur at a very low level if the presently specified separation distances for generating the seed had been used. If the recommended Canadian separation distances of 800 metres still produce a considerable level of cross pollination they will have to be reviewed and extended. This will be a matter for the Canadian authorities. However, seed suppliers should be restrained by EU/UK regulations that specify an acceptable level for seed "contamination".

(c) *Volunteers*

It would always be potentially possible for inadequate destruction of volunteers in a field that is to be used for seed generation to allow these to grow with the seed crop and hybridise with it. Of course it would have to be a compatible variety of the same species. This would be unlikely if appropriate crop rotation schedules and volunteer control methods are used.

(d) *Accidental seed mixing*

There have been at least two cases where unauthorised seed has been provided for growing purposes. One occurred in Canada, and one in Switzerland/Germany. So human error, which presumably was the cause of the mixing, can be a cause of seed contamination.

(e) *Deliberate contamination*

There has been a case in France where non-GM seed was deliberately contaminated with unauthorised GM seed. This is another potential cause of the contamination of non-GM with GM material.

CONCLUSIONS

The NFU is satisfied that the present separation distances used for certified seed production will produce an acceptable high level of seed purity assuming that they are properly implemented. However, the situation with Hyola oilseed rape may lead to the need for the review of the separation distances required for crops where there are a significant proportion of male sterile plants. There are many possible methods that seed can be contaminated. Some of them are by means of accidental or deliberate human intervention.

12 July 2000

APPENDIX 8

Memorandum submitted by the United Kingdom Agricultural Supply Trade Association (UKASTA) (G 9)

UKASTA represents over 300 companies involved in compound animal feed manufacture, the supply of agricultural inputs, such as seeds, fertilisers and agrochemicals, to farmers and the marketing of combinable crops on farmers' behalf. The annual turnover of members' businesses is in excess of £5 billion annually.

UKASTA welcomes the decision of the Committee to hold this short inquiry, especially following the detection by Advanta Seeds of genetically modified rapeseed in supplies of conventional rapeseed sold in the UK. The case has highlighted an area which has been of wider concern to those within the industry for some time and it is an issue our European bodies have sought to move forward in discussions with the Commission.

The incident has however produced a series of what might only be described as "knee-jerk" reactions by legislators and our concern is that we are now to be pushed down a road which will be extremely costly for the seed supply industry but which may do little, if anything, to address the real issues, or indeed provide any greater degree of information or choice for the final consumer.

The question of a possible GM presence in non-GM seed supplies was raised in a European industry context during 1999 and at a meeting in October last year it was agreed that the maize industry would introduce a 1 per cent threshold for the sale of non-GM seed in response to movement by maize seed consumers, particularly in France. In November last year a meeting was held with Commission representatives to discuss the situation and reference to the need for community wide action was indicated in the Annexes to the Commission White Paper on Food Safety which was issued earlier this year.

As a result of the White Paper the Commission is looking to introduce regulatory measures to address the situation and has now suggested that these measures could be in place later this year, a time period which history might suggest is not going to be feasible. In the interim it is intended that a plan for co-ordinated and harmonised (voluntary) action be introduced. The most important point relating to this intended interim action is that a threshold of 0.5 per cent be established where a GM content of an approved consent, under Directive 90/220/EEC, is detected.

We believe that the reasoning behind the desire for such action is flawed and most importantly, at this present moment, the industry does not have the scientific tools at its disposal to meet a threshold at the level being proposed. Our concerns cover two specific areas: that the process of elimination to determine presence or absence of all approved constructs will create severe logistical problems for the industry; and that there is no validated methodology for the assessment of GM content, certainly at a quantitative level below 5 per cent.

There are a number of techniques used to determine the presence or absence of modified material in a sample but most relate to Polymerase Chain Reaction (PCR) forms of determination. Whilst multiple tests can be done the method is, in effect, a process of elimination. Given that the EU approval process remains in a suspended state the number of constructs to be eliminated is not becoming any less when viewed against the global progress of the technology.

If the intention is that all seed lots are subject to this testing process then not only would the costs involved prove to be prohibitive for all but the very largest of companies, there would also be the time implications for crops such as winter sown oilseed rape which require a rapid turn-round between harvest and re-sowing.

The continued viability of small and medium sized enterprises in the seed production area is a real matter for concern and one which we trust the Committee will give appropriate consideration to in any recommendations it may wish to put forward as a result of this inquiry.

The recent events with spring oilseed rape have brought to the fore issues of methodology. Whilst there are efforts within the EU to produce standardised methodology for GM testing procedures, a resolution remains some way off. Results from ring tests carried out both in this country and within the EU suggest that at this moment in time there is not an acceptable level of accuracy in testing, particularly on a repeatable basis and at levels down as low as 0.5 per cent. With that in mind we remain very concerned at what the Commission and others may be wishing to see introduced as a political fix, irrespective of whether or not it is deliverable in terms of scientific reality.

We trust this brief memorandum is of use in highlighting some of the areas of concern thrown up by recent events.

10 July 2000

APPENDIX 9

Memorandum submitted by Mr John Sanderson (G 10)

GMO CONTAMINATED RAPESEED: A FARMER'S EXPERIENCE

At 6 am on Thursday 18 May we heard the *Today* programme news that Advanta had supplied rapeseed to farmers in the UK that had been contaminated with genetically modified seed. Later that morning I was contacted by my seed merchant, the Hyola 38 we had sown in March was one of those affected.

I rang the NFU legal helpline. I was the first to do so, the NFU had yet to formulate their response. I then set about finding as much information as possible.

I was taking a group around the farm that afternoon, we do this on a regular basis, one of our diversified farm activities. Suffolk County Council and the local tourist information centres book groups for a guided tour. The main interest is the history of the farm, we also describe our conservation work. On this occasion it provided a good opportunity to gauge public reaction to the day's news, there was unanimous disapproval.

I watched BBC *Newsnight* and all the other programmes that evening. Whilst politicians and company spokesmen reassured the public "Farmers could carry on with this crop as normal", none appeared to appreciate that they may not want to. It may have only been a 1 per cent contamination, although the exact level seemed uncertain, the public perception was that this was a GM crop. I decided to destroy my rape crop.

— My Hyola was growing immediately adjacent to my winter rape. My neighbour's crop was in an adjacent field, in fact it surrounded it. There was no buffer zone.

— I know of at least two local organic farms that it might threaten.

— We are actively considering converting our beef enterprise to organic production.

— Tourism and public access is part of our business, our future depends on it. The care of this particular landscape is our trademark.

— I have serious reservations as to the environmental safety of GM crops.

— There did not appear to me to be a market for this crop.

Therefore the potential damage to the future of our business far out-weighed the loss of this crop.

When contacted through my seed merchant Advanta just repeated that there was no reason why the crop could not be grown on to harvest as normal. So we contacted the MAFF/IACS office to tell them of our intention to destroy the crop, and I invited the press along. I reasoned there would be more chance of compensation for us, and the other farmers involved, if I explained our situation publicly.

We were not quite prepared for the press reaction. The story made most of the main news bulletins.

Subsequent events have completely justified our actions, we are still receiving letters and calls of support.

What has amazed me is the wide spectrum of opposition amongst the general public to GMOs. It is not just environmentalists. Pensioners, families, and all sorts of people from all walks of life are opposed to their release.

BSE had a devastating effect on our business. We breed pedigree beef cattle and have exported both semen and breeding cattle. In the late eighties we were building up useful contacts in Australia and the USA. A cow we had bought in was infected; nothing we had bred or reared here contracted the disease. But having had a case on the farm we were blighted, we could not export to America, and other markets became difficult. This experience has made us extremely wary of anything that might affect our ability to trade.

Obviously there is no comparison with this issue, public health is not at all at risk, but the legacy of BSE is there in the public mind. Science has to some extent lost credibility.

The UK GM free status is a valuable market advantage at this time with a strong pound. I am convinced that a majority of consumers want to buy "GM free". My status on this farm is important to me. The growth of the organic sector in recent years is an example of the power of consumer.

A spokesman for Advanta said recently that "zero-tolerance of GM material is no longer realistic, pollen transfer is a natural phenomenon". All the more reason then to source our seed supplies carefully until the trials are complete. I will certainly not be buying imported seed in future.

The challenge for the government must be to set standards that are acceptable to the consumer.

If at such a time GMOs are considered safe to grow, there will still be a market for GM free, and farmers wishing to supply it. Organic units will also need to be protected from pollen transfer. The agricultural industry is currently spending a fortune on crop assurance. An incident like this must damage consumer confidence. I do not believe that this generation of GM crops has anything to offer the farmer but increased costs and further erosion of that precious confidence.

13 July 2000

APPENDIX 10

Supplementary memorandum submitted by Advanta Seeds UK (G 12)

Advanta wishes to clarify certain answers which it gave to the Committee at its hearing of oral evidence held on Tuesday 18 July 2000.

Question 4. On reflection, we believe that "universal recognition" extends beyond the seed industry and is recognised by the Minister for the Environment and English Nature.

Question 6. In its written submission to the Committee, Advanta asserted that it believed a "lack of understanding of the basics of Agriculture existed in some quarters of the Ministry and most quarters of the media".

In addition to the comments we made verbally about issues of crop sterility, the basis of these comments is:

1. The deadlines for achieving regulations do not seem to be well coordinated with the predetermined deadlines which are set by the growing season. For example, if seed is to be tested as it is harvested (to determine whether it is fit for processing), it is no good setting the standards for that testing after harvesting has taken place. For winter oilseed rape, harvesting was underway at the time the evidence was being taken (18 July). To state that regulations could be available by the end of August is simply too late for the Autumn 2000 planting season. Furthermore, the hope for something at a European level by December misses the entire Autumn crop in the UK.

Advanta would willingly provide a calendar of key timings should the Committee wish it.

2. Even in the evidence given to the Committee on 18 July, the difference between a crop grown commercially for grain and a crop grown for hybrid seed continue to be misunderstood. This is particularly true in relation to the argument about isolation distance. MAFF has asked for feedback on the adequacy of separation distances for SCIMAC trials. However, the requirements for separation will be different depending on whether the crop is for hybrid seed production or for commercial grain. We see no evidence that this point is understood even now.

3. We believe that there needs to be a greater appreciation of how seed is imported and distributed, so that the spot checking referred to by DETR can be best aligned with the point of most risk. This will need to be extended beyond seed companies and their merchant customers to farm saved seed. We don't believe this area is sufficiently understood, but know the seed industry would be happy to assist in providing this information to MAFF/DETR.

4. We have detected a view that processes can be handled differently between the different devolved assemblies of England, Scotland, Wales and Northern Ireland. We would like to make the point (that has been recognised by Government at a European level) that seed distribution does not discriminate between the component countries of the UK. To have regulations that do discriminate will be impossible to administer and manage.

Question 8. Dr Buckeridge referred to Advanta's separation distance of 4km when producing seed of its spring oilseed rape varieties. In Advanta's protocols, the 4km relates to separation from the nearest known GM rapeseed commercial crop. A separation distance of 1,600m is used for conventional commercial rapeseed crops.

Question 9. In 1998, tests using DNA methods were unproven (such as PCR testing) and documented as having reliability problems. Tests using "bioassays" were in development, but we are not aware that they had been routinely adopted by seed companies. In 2000, we checked seed with an independent laboratory, using this type of method. We don't think this service was available in 1998. Bioassay tests can be very time consuming if done accurately. In rapeseed, it can take up to 60 days to prepare seed and complete a test. These timescales are very hard to accommodate within the normal process of seed production, processing and planting.

Advanta doubts that governments will choose bioassay testing when decisions about approved testing methods are reached. This is because they are incapable of distinguishing between "authorised" and "unauthorised" GM events—a distinction that is very relevant under Directive 90/220.

Even in 2000, there is a lack of clarity on preferred testing methods (as demonstrated in the evidence given to this Committee).

In 1998, Advanta received no indication from Government that seed testing was required. It had been advised (in a letter from DETR of February 1998) that DETR was unclear what arrangements had been made to segregate crops in North America. Advanta actions were focussed on ensuring segregation of crops by attention to separation distances. In other words, adopting distances that were five times the regulatory requirement in Canada. At that time, given the uncertainty surrounding testing, this was judged to be the best protection. The fact that the Government has indicated no risk to health or the environment shows that judgement was sound.

Question 17. The view that destruction was an over-reaction was also expressed by English Nature.

Question 21. Dr Buckeridge described the sterility system and the production of hybrid rapeseed for sowing. The isolation distances used by Advanta for this purpose have no relevance to the separation distances used in SCIMAC field scale trials which were designed to test the environmental impact of a commercial crop grown for grain.

This was one important example of a basic agricultural fact that we felt that Government and media struggled to understand.

Question 21. Dr Buckeridge refers to the actions taken with "contaminant plants". These were plants which survived exposure to the herbicides used in the bioassay tests, indicating that they carried the GM impurity.

In a commercial crop grown from this seed, you have to look for the rare plant which is not producing any pollen. This will be the impurity. That is exactly what Advanta found in these "Hyola" seed batches. Less than one in a hundred of the plants appeared incapable of satisfactory pollen production. In other words, they were impurities with extremely compromised fertility.

Question 27. Since the meeting of the Committee, Advanta has commenced testing seed of winter oilseed rape produced in the UK for sowing in August. Eight samples from harvest 1999 have been submitted to an independent laboratory for testing for the most common GM components (35S promoter, NOS terminator and FMV promoter). During this testing, we experienced several false positives triggered by natural infections of the rapeseed with Cauliflower Mosaic Virus. This problem with PCR testing is well documented, but highlights the frailty of the tests. It has, however, led to expensive and time-consuming re-testing before the seed lots could be declared clear.

Question 34. Dr Buckeridge undertook to write to the Committee to expand on the points made by Advanta in paragraphs 4.2 and 4.3 of its submission. These are dealt with in comments on Questions 64 and 65.

Question 34. Mr Ruthven explained that Advanta had accounted for 5,393 hectares and gave reasons why this exceeded the quantity of seed sold, which was for 4,718 hectares. Advanta is firmly of the view that the tracing of the seed, including the additional area sown provides very strong assurance that all crops grown from the affected seed are being traced. Arrangements for the payment of compensation include a specific verification with each individual farm that these crops have been destroyed. At the time of making this clarification, registrations have increased from 323 to 337 and the area sown from 5,393 to 5,422 hectares. So far as Advanta can tell, registrations are virtually complete.

Question 34. Mr Ruthven compared the possibility of tracing 100 per cent crops to "the contamination itself". He intended this to convey that any shortfall in the tracing of the crops is likely to be minimal.

Question 36. Mr Ruthven commented that he could not understand why the farmers should not sell the crop [within the EU]. In fact, the reason is the absence of an EU Part C marketing consent.

Question 44. Dr Buckeridge explained that the environment for producing seed on the prairies was different in 1999 from that in 1998. This related to the expansion of GM rapeseed production, which rose from 15 per cent of the rapeseed crop in 1997, to 35 per cent in 1998 and 55 per cent in 2000. The total area of spring rape grown commercially on the prairies is in the region of 5.5 million hectares. The total area of major crops under arable cultivation at any one time is around 22.0 million hectares. Although GM spring rapeseed production increased from 15 per cent to 35 per cent in 1998, it still represented only 8.6 per cent of total cultivations. By 1999 sowings of GM rape had grown to 13.6 per cent of total cultivations. Advanta believed that even at these levels there was little risk. However after four years of cultivation of GM crops in the area it faced problems in locating fields not previously sown with GM crops and believed that the maintenance of a 4km separation distance would be extremely challenging. The fact that under normal crop rotations, rape seed crops cannot return to the same land for four years compounded these difficulties.

Question 52. Dr Buckeridge offered to confirm the date that the order to destroy crops in France was given. According to Advanta records, this took place on 25 May.

Question 60. Mr Ruthven indicated that he thought the industry would welcome product liability. Advanta's position on this point is that it is not in favour of product liability in substitution for proper regulatory guidance on: (a) thresholds for adventitious GM presence; (b) approved testing methods; and (c) the specified statistical analysis to be applied to the results of such tests. In circumstances where all parties before the Committee were agreed that 100 per cent purity (including in relation to adventitious GM presence) is not achievable, then any suggestion of product liability in this area in the place of clear and unambiguous regulatory guidance for which we have called, would seem to Advanta pernicious. In saying that Advanta would welcome product liability, what we meant was that we would welcome product liability for non-compliance with agreed threshold levels, measured by tests, conducted in accordance with approved testing methods, analysed by approved statistical analyses as set out in the new Regulations which Regulations must now be forthcoming as a matter of prime urgency.

Questions 65 and 66. Dr Buckeridge undertook to provide the Committee with evidence of the assertions made in Advanta's submission at paragraphs 4.1 to 4.3. Advanta now offer the following evidence:

Advanta believes that pressure groups have exaggerated the incident. We presume they would wish to do so in order to promote the view that GM crops should never reach the market. We have no issue with their right to promote this view, but believe their representation of the facts should be responsible and accurate.

As a point of reference, Advanta is supportive of GM technology, if it is shown to deliver farmer and consumer benefits, and if it has passed the regulatory tests required. It has been involved in the technology in order to keep its North American product range competitive. It has not invented any GMs of its own and has no plans to do so. It is not selling any GMs in Europe.

Advanta believes the aforementioned exaggerations have occurred in four areas:

(1) The crop concerned was consistently referred to as "GM". It was not. It was a non-GM crop with a GM impurity which constituted less than 1 per cent of all the seeds.

(2) The impression was given that GMs had been planted on a massive scale, and in an area far greater than the SCIMAC trials. The total crop area involved was less than 5,000 hectares (around 1 per cent of the entire UK rape crop). The impurity was less than 1 per cent of this 5,000 hectares, in other words, less than 50 hectares. The area for SCIMAC trials is between 350 and 400 hectares.

(3) In the evidence reported to the Select Committee, published in your report on segregation (28 February 2000), we regarded the assertion that PCR testing can be done to an accuracy of 0.001 per cent as mischievous. Our reasons for this are given in our original written submission.

(4) We believe the emotive language used by the pressure groups and the media makes reasoned discussion of the facts extremely difficult. Therefore, we think it is difficult for the general public to make up its mind objectively. Examples are that the event has been consistently referred to as contamination, worse, as "living pollution" and at the most extreme as "an environmental catastrophe".

Question 87. In its submission to the Committee, Advanta stressed that there was a need and that the industry had been pressing for regulation. Advanta understands that no formal request for regulation or guidance on the issue of adventitious GM impurities in seed has been made to UK Government by the

Industry, but the Chief Executive of the British Society of Plant Breeders has confirmed to Advanta that it has been discussed informally with officials and that the point was made on several occasions to MAFF and UKROFS that organic seed, if imported from USA, was likely to contain GM impurities. Formal approaches were made by the European Seed Association to the EU at a meeting on 11 October 1999.

Question 126. Mr Drew's Question to Mr Meacher indicates clearly that there is a difference of opinion in what was said in the telephone conversation between a representative of Advanta and Dr Smith of DETR on 25 April 2000. A memorandum of the conversation was prepared by the Advanta representative and circulated to Advanta directors on 25 April. Advanta's understanding of the conversation is based on this record.

The writer of the memorandum has re-read it in the light of the evidence of Dr Smith and confirmed that the note accurately records his recollection of their conversation.

The memorandum records that DETR had received written legal advice that "Advanta nor its farmer customers had committed any offence until it became aware that its seed was contaminated. Thereafter, as we had halted sales, there were no grounds for a prosecution". Further legal opinion was to be sought on 26 April. The Advanta representative stressed the urgency of the situation in view of the huge potential cost and limited opportunity to mitigate because of the lateness of the season. DETR promised to telephone in the course of the next two days. No call was received.

Advanta hopes that the points of clarification set out in this letter will be of assistance to the Committee in reaching the conclusions for its report.

24 July 2000

APPENDIX 11

Supplementary memorandum submitted by the Parliamentary Liaison Officer, Ministry of Agriculture, Fisheries and Food (G 13)

In the course of giving evidence to the Committee on 18 July, Baroness Hayman undertook to confirm when MAFF first received representations from the seed industry on the need for regulation concerning the GM content of conventional seeds.

As Baroness Hayman said in her evidence, the Department knew that there had been representations at a European level by the European seeds industry to the Commission on these issues. Discussions were also taking place within the OECD forum. However, I can confirm on her behalf that the Department can find no record of any direct representation to the UK Government by the seed industry on this issue prior to the Advanta memorandum handed to officials at a meeting with industry representatives on 12 May 2000.

It may also be helpful to update the Committee on the likely timing of legislation on this issue at EU level. Baroness Hayman met Commissioner Byrne last week when he said it was now possible that the Commission's proposals would not appear until early next year, because of the work needed to progress the long-awaited revision of Directive 90/220 dealing with the deliberate release of GMOs. This would mean a slightly later timetable than the Commission's original one.

I hope this helps with your inquiry. Please contact me if you require anything further.

25 July 2000

AGRICULTURE COMMITTEE REPORTS IN THE CURRENT PARLIAMENT

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